

COMPUTERWORLD

Oracle users frustrated by wait for DBMS, tools

1993 utilities to trail Oracle 7's October release

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — Oracle Corp. users, eager to install the new Oracle 7 relational database management system, have learned that only a select group of sites will get delivery this fall. Worse, those lucky enough to get their hands on Oracle 7 will have to use the 3-year-old, character-based SQL Forms 3.0 tool to build new applications for the next three to six months.

A new tool set that supports graphical user interfaces and non-Oracle databases will not be announced until early next year, Oracle said last week.

Some users were clearly frustrated that the integrated tool set would be delayed from the fall until early next year — slowing development plans for Oracle 7. Until the new tool set arrives,

users must write extra code to invoke Oracle 7's new features.

"Users who need these tools today are having to turn to [vendor] sources other than Oracle to get [similar] capabilities," said David Kreines, a project manager at the Educational Testing Service in Princeton, N.J., who chaired the International Oracle User Group conference.

Oracle executives confirmed that Oracle 7, announced June 15, would be delivered to select customers starting Oct. 1, fol-

Continued on page 10

FCC ruling opens local loop

BY ELLIS BOOKER
and MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Federal regulators took their first historic steps last week toward opening the local-exchange network to the kind of price and service competition that has benefited business customers in the long-distance market.

Collectively, the watershed rulings permit "alternative access" carriers such as Metropolitan Fiber Systems, Inc. and Teleport Communications Group, as well as large end users, to physically collocate their networking gear inside local-exchange telephone company cen-

tral offices and connect to long-distance dedicated network services.

Bypass carriers are currently limited to collocation granted on a state-by-state basis for local service interconnection only.

Strong support

Coalitions of business network managers, such as the International Communications Association and the Ad Hoc Telecommunications Users Committee, strongly supported the move.

Group representatives said they expected competition to produce lower prices, better service and network redundancy so they can reroute traffic around

Continued on page 8

Only one direction

Alternative carriers represented only 0.2% of local-exchange business last year. Their market share is expected to grow quickly in the next decade.

1991 percent of market share by revenue

CAPs* 0.2%

Local-exchange carriers 99.8%

1991 total local exchange: \$90 billion

* Competitive Access Provider

Source: Federal Communications Commission; Association for Local Telecommunications Services

Forget the glitz: Unix Expo attendees seek remedies

BY MARYFRAN JOHNSON
CW STAFF

NEW YORK — The "Show Me" state of Missouri might be a more appropriate staging ground for Unix Expo, which opens here tomorrow to users who are in no mood for futures or fantasies.

"We need to define open systems in terms of the customer, not the technology itself," said Mark Factor, MIS director at Au Bon Pain, Inc. in Boston. "In the end, an open system is whatever gives your company president or end users the information they want."

Factor is one of the information systems executives featured in a conference session on the "payoffs and pitfalls" of moving to open systems. Another is Kevin Reilly, director of operations and technology at Hyatt



Steven Lewis

EG&G's Bob Curran: 'I think the interest in Unix is much stronger in the larger shops now'

Hotels Corp. in Chicago.

"What I can tell other users is that while it's not particularly easy, the move from proprietary to open systems is doable," Reilly said. "It makes your technology and administrative life much, much easier."

With an expected 28,000 attendees and more than 300 exhibitors, this Unix Expo will be the largest ever. The underlying theme focuses on real-world practicality — namely, what does this technology do for my company today?

"People want to see the steak, not the sizzle," said Gary Donnelly, one of the show committee members and director of membership at the National Information Technology Center in Rockville, Md.

"Users are a lot less interested in the latest bells and whistles. They want to see a so-

Continued on page 20

No time for downtime

Large-capacity mainframe systems get fairly high user satisfaction scores in the crucial area of reliability for the second straight year

See Buyers' Scorecard, page 48



Product Score

1991 1992

HDS EX/GX 9.3 9.7

IBM ES/9000 9.4 9.4

Unisys 2200/A19 8.8 9.3

Amdahl 5990/5995 9.2 9.0

DEC VAX 9000 7.4

Maximum possible score: 10
*not included in 1991 survey

Micro giants duel at CAMP conference

Microsoft serves up product futures while IBM offers OS/2 assurances

BY MICHAEL FITZGERALD
CW STAFF

CHICAGO — Executives from Microsoft Corp. and IBM offered glimpses of the future to attendees at last week's Corporate Association of Microcomputer Pro-

fessionals meeting here, but Microsoft used its top billing to wow the crowd in the face of a defensive IBM.

Steve Ballmer, a Microsoft executive vice president and a featured speaker, treated CAMP to a presentation highlighting beta-test versions of numerous products. The presentation included peeks at Windows New Technology, DOS 6.0, the forthcoming Windows for Workgroups and FoxPro for Windows, as well as Microsoft's own Access relational database and many 32-bit applications, including Excel and Word.

The goal of these products, Ballmer said, is to produce a suite of enhanced applications that can dynamically exchange data.

Meanwhile, John Patrick, IBM's director of Personal Systems software marketing, focused his session on reassuring customers that OS/2 remains part of IBM's long-term strategy. IBM said it will officially adopt Carnegie Mellon University's Mach 3 as the kernel for both OS/2 and AIX.

Patrick said IBM continues to focus on allowing applications to

Continued on page 12

INSIDE

Former Frito-Lay IS chief Charles Feld leaves Perot Systems to restart his own consultancy after only two months on the job. Page 6.

Beginning this week, Computerworld is publishing a comprehensive index of companies mentioned in each issue's articles. The index includes vendors, users, trade associations, academic institutions and user groups and appears at the back of the issue, just before the Stocks page. Page 107.

NEWS

- 4 Apple** increases its efforts in the mail-order channel.
- 6 Perot** Vice President Charles Feld leaves his new employer to resume running his start-up consultancy.
- 6** The government has ordered airline reservation systems to allow customers to use third-party hardware.
- 7** And the winner is . . . electronic vote tabulation systems.
- 10 Sybase** has made the mainframe a client in the client/server equation.
- 12 Dell** is bundling OS/2 on its PCs.
- 12 IBM** is set to make a PS/2 announcement but pushes back the debut of the corporate entry-level offering.
- 14** Products from **Make Systems** aim to give users the most bang for their networking buck.
- 15 NetView/6000** Version 2.1 is here.
- 16 DEC** reveals its RDBMS strategy.
- 24 Lotus** unveils a developer's kit for its messaging interface.
- 24** A Sun SPARCstation interface from **Network Peripherals** gives users more FDDI options.

Quotable

"I really like the idea of running to the post office to get the mail."

CHARLES FELD
FORMER FRITO-LAY EXEC

Explaining his decision to leave Perot after just two months. See story page 6.

DESKTOP COMPUTING

- 37** Despite a tough sell from **Compaq**, the corporate printer market still leans toward **HP**.
- 40** Technology Analysis: New color portables from **Dell** and **Toshiba**.

WORKGROUP COMPUTING

- 54** **Axil Workstations** introduces Sun SPARCstation 10 clones.

ENTERPRISE NETWORKING

- 63** **FTS-2000** users feel stymied by vendors' legal and public relations battles.

LARGE SYSTEMS

- 67** Two firms use metrics to evaluate data centers.

BUYERS' SCORECARD

- 48** **Hitachi Data Systems'** GX series rates high among mainframes.

APPLICATION DEVELOPMENT

- 73** **Fidelity Investments'** IS division builds a new development methodology.

PRODUCT SPOTLIGHT

- 79** Mainframes will see a lot of action this decade.

IN DEPTH

- 85** A rundown of the hot industries for jobs. By Emily Leinfuss.

MANAGER'S JOURNAL

- 87** IS managers can help prevent repetitive strain injuries.

DEPARTMENTS

- 6, 16** News Shorts
- 28** Advanced Technology
- 32** Editorial
- 89** Calendar
- 92** Computer Careers
- 103** Marketplace
- 108** Stocks
- 109** Computer Industry
- 110** Inside Lines

Company index appears on page 107.

The 5th Wave



"WHY A 4GL TOASTER? I DON'T THINK YOU'D ASK THAT QUESTION IF YOU THOUGHT A MINUTE ABOUT HOW TO BALANCE THE MAXIMIZATION OF TOAST DEVELOPMENT PRODUCTIVITY AGAINST TOASTER RESOURCE UTILIZATION IN A MULTIDINER ENVIRONMENT."

EXECUTIVE BRIEFING

■ **The FCC begins to pry apart** the local telephone services monopoly enjoyed by telephone companies. The hope is that competition in the local loop will lead to lower prices and better services for business customers. **Page 1.**

■ **Average mainframe discounts are expected to average 23%** this year, according to Gartner Group, compared with an average 18% discount in past years. Others log the average discount at 30%. But don't let the size of the discount blind you to what you're really getting: Some of the "great deals" include freebies that purchasers never use. **Page 79.**

■ **Unix Expo, with attendance nearing 30,000,** will feature new IBM strategies for the RS/6000 and AIX, lots of new products and practical advice on implementing Unix in the commercial workplace. **Page 1.**

■ **Oracle users learn that an integrated tool set** for Oracle 7 will be pushed back from this fall to 1993. Some are frustrated by the news. **Page 1.** Sybase introduces four connectivity tools to complement its client/server database strategy. **Page 10.**

■ **Banyan will offer its network services** on archival Novell's NetWare as part of a new strategy to compete on network operating systems but cooperate on service products. **Page 4.** **Make Systems** announces a simulator that takes the guesswork out of re-engineering LAN internetwork installations. **Page 14.**

■ **IBM PC Co. adds strength** at the high end with a beefed up PS/2 premium line, but the industry is more concerned about the upcoming ValuePoint announcement. **Page 12.** Dell tops a user survey in reliability, service and support. **Page 39.**

■ **Carnegie Mellon develops a multilingual speech recognition** and translation system, as years of industry research begin to yield limited applications. **Page 28.**

■ **The job market stinks** these days, but don't despair. We asked recruiters and hiring managers to pinpoint those industries in which prospects are good. Among their picks: health care, financial services and distribution. **Page 85.** Learn how you can increase your chances of employment with

tips on improving your resume, your appearance and the things you might say in an interview. **Pages 92 and 93.**

■ **Users of the giant Federal Telecommunications System (FTS)-2000** say it's working well and is reasonably priced, but they are concerned about their ability to upgrade to newer technology. **Page 63.**

■ **Borland faces timing challenges** as it tries to establish itself in the Windows spreadsheet market with Quattro Pro for Windows. **Page 37.**

■ **Is the network printing town big enough** for the both of them? Compaq's new products have the features and the price, but Hewlett-Packard has the overwhelming mind-set. **Page 37.**

■ **DEC shows off an Alpha-based PC prototype** at a European user meeting, saying the first machines will deliver six times the price performance of a 486. **Page 44.**

■ **On site this week:** Fidelity Investments copes with its complex environment by fashioning a new standard for application software development. The \$1.3 billion Boston firm has 10 projects under development that use the new methodology, which is expected to speed completion by boosting programmer productivity. **Page 73.** In an economy plagued with plummeting interest rates, Northwest Mortgage turns to wireless workgroups to hurriedly add networked personnel and clean up processing backlogs. **Page 51.** California-based Inno Designs uses graphical workstations to speed time-to-market for its product designs in consumer electronics and other retail areas. **Page 51.**

BUSINESS**INTERNATIONAL
COMPETITION
INTENSIFYING**

One by one, world trade barriers are falling, leading to the rise of a truly global marketplace.

Aided by the substantial breakthroughs in telecommunications and computer technology, many firms are finding it easier than ever to enter markets around the world that were previously unreachable.

Even the smallest firms are now able to compete on a global basis, and are finding that overseas markets offer greater growth potential than domestic markets, which may be flat or saturated.

However, this advent of increased global competition has had a brutal impact on price margins.

Local firms which had previously been protected by tariffs or government support are now finding themselves pressed to compete with the new wave of global competitors, who take advantage of economies of scale to offer products of quality at lower prices.

This new global marketplace has created the demand for multi-currency financial software that can consolidate a firm's global financial picture into one integrated balance sheet or P&L in seconds.

Due to very confusing, complex and ever-changing tax structures and foreign currency exchange rates that vary country-by-country—this is a new challenge to the new breed of CFOs. ■

**PRESSURE
HEATS UP ON
FINANCIAL
FORECASTING**

The ability to accurately forecast both financial trends in the marketplace as well as the financial performance of the firm is becoming critically important in today's fast-moving, highly competitive marketplace.

With the introduction of new multi-dimensional modeling and financial analysis software, the quality of financial forecasting has risen substantially over the past few years.

New spreadsheet technology such as CA-Compete!, which allows the creation of a multi-dimensional cube of data as

from a
has
decade
fram
to ju.

TIMES LIKE THESE CALL FOR THE FINANCIAL SOFTWARE OF THE FUTURE.

How else will you compete in a world that gets more competitive, more complicated and more technology-driven every day?

New CA-Masterpiece® 3.0 is designed for such a world. It's got EDI. GUI. Client-server. Multi-dimensional modeling. Multinational and multi-currency support. And the industry's broadest selection of high-performance modules and add-ons.

CA-Masterpiece 3.0 is a generation ahead of the financial software you're probably using today, and it covers all the hardware platforms you'll ever need: MVS, VSE, UNIX, VAX and AS/400. From mainframes to workstations to PCs.

Best of all, it's backed by CA, the world's leading software company, and software partner to 95% of the Fortune 500.

So dial 1-800 CALL CAI for a free Demo Disk of the financial software of the future.

There's never been a better time.

NEW CA-MASTERPIECE 3.0.

**COMPUTER
ASSOCIATES**

Software superior by design.

© Computer Associates International, Inc.,
One Computer Associates Plaza, Islandia, NY 11788-7000.
All product names referenced herein are trademarks
of their respective companies.



powerful and are wooing users from traditional environments. UNIX, AS/400, and others offer incredible breakthroughs and (graphical user interfaces).

These hardware platforms are waiting for users to await proven, mission-critical software to run on these exciting systems.

DOWN-SIZING TRENDS ACCELERATES

What will be needed is a way to integrate innovative, new, cost-effective platforms and technology with clients' existing systems and investments.

One can afford to walk away from past investment and start over. Pouring hundreds of millions of dollars into IS systems for several decades, America is starting to demand a return on investment from its MIS departments. (Return On Investment) of IS is difficult to measure and impossible to project. But still, a meaningful way to assess it must be found.

One aspect of it that is easy to understand is the amount of money in existing IS systems.

Adding back and adding up the investment in systems, training, development, etc., it's easy to know how much a corporation will be abandoning its current systems.

For corporations who have undergone this exercise, it can be quite an experience. It also puts in a new light proposals to scrap existing systems. ■

INVESTMENT PROTECTION #1 PRIORITY

Many hardware and software vendors are proponents of "starting over" for various self-serving reasons, it is rarely a cost-efficient or rational move for clients. Instead, prudent clients focus on evolutionary technological advances, as opposed to revolutionary ones. There's no reason to throw away existing systems when there's always technology that integrate the old with the new.

Apple reaching out to touch corporate customers directly

Begins push to sell to large accounts through mail order, direct channel

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. made another bid to get closer to the corporate customer last week by increasing the number of large accounts to which it will sell directly.

The company also continued

Apple will limit its initial catalog sales to peripherals, with the recently introduced PowerBook 145 portable being the only computer available. Although an Apple spokeswoman said the company plans to "expand the hardware offerings" and include more Macintosh personal computers in future catalogs, ana-

Palo Alto, Calif.

"Given the choice, people would rather go down to a local store and take home a product today than mail away for it," said Marcia Kaplan, Merrin's director of research. "With the recent price-cutting battles, catalog sales lost a lot of the advantages they once had."

Rather, catalog sales might appeal to people in more sparsely populated areas who might not be able to get their hands on the Apple supplies the catalogs offer. "We'll be able to expand our reach," said Maureen Loeb, manager of catalog sales at Apple USA.

To sweeten the deal, Apple will provide a next-day turnaround for most orders and give customers one-year, toll-free telephone support.

Gaining an edge

The company's move follows a long-term effort to compete more effectively with producers of low-cost PCs. Dell Computer Corp., most notably, has emerged as a strong competitor in the PC market by selling low-cost, high-quality PCs almost exclusively through mail order. Its success has forced IBM, Compaq Computer Corp. and Digital Equipment Corp. into the PC mail-order waters as well.

Apple's first catalog will be mailed out in mid-October to about 1.1 million customers in the general business, consumer and education markets. Revised catalogs will be sent out quarter-

PowerBook 100s recalled

Apple announced last week that some owners of its Macintosh PowerBook 100 portable computer should return their units for minor circuit board modification.

The concern emanates from an electrical short that can melt a small hole in the bottom of the machine. So far, the malfunction has occurred in only three of the nearly 60,000 PowerBook 100 units that could be affected by the problem, Apple officials said. No personal injury or property damage has resulted from the problem, and the short did not affect the performance of the machines, they added.

PowerBook 100 computers bearing serial numbers below SQ211xxxxxx and SS216xxxxxx require modification. Units with serial numbers equal to or greater than SQ211xxxxxx and SS216xxxxxx are not affected.

This problem marks the second time an alert has gone up about the PowerBook. Last April, the company confirmed that loose battery packs can short out and create a fire if a piece of metal comes into contact with the negative and positive poles simultaneously [CW, April 27]. The company subsequently offered users a free protective case.

The current short-circuit problem cannot occur in the PowerBook 140, 145 or 170 models because the component configuration is different. Model 100s made since March are also not affected.

Apple is asking PowerBook customers in the U.S. with the specified serial numbers to contact their dedicated PowerBook 100 Safety Helpline at (800) 572-1731 from 9 a.m. to 8 p.m. EDT, Monday through Friday, to schedule modification. Upon confirmation, Apple will provide express pickup of the unit, make the free adjustment and return the unit by express service. Turnaround time will be about three days, Apple said.

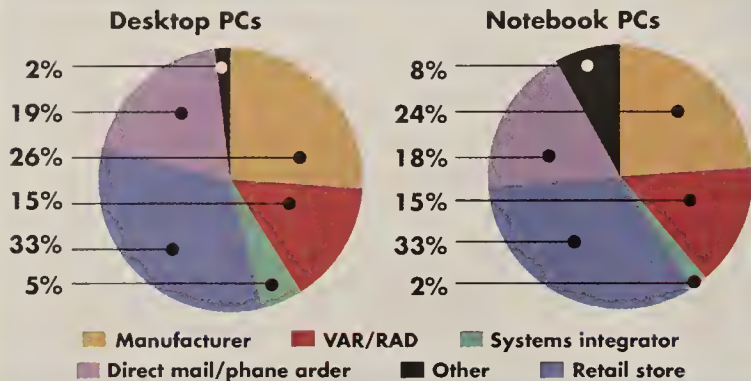
JAMES DALY

Expanding options

Apple is extending its reseller strategy to include the mail-order channel, while increasing its emphasis on direct sales to large corporations

Which of the following sources do you typically go to?

Survey of 1,091 IS professionals at medium and large companies



Source: CW Database Division

CW Chart: Michael Siggins

its efforts to get its products into the hands of the masses when it announced plans to start selling a limited number of its goods by mail order next month.

Apple USA President Robert Puette said he still expects the majority of the company's corporate sales to involve dealers, adding that Apple will still contract out to these traditional distributors. He said the new initiative will target corporate accounts with 1,000 employees or more.

Although some dealers may carp about Apple's new plan, direct sales are already a part of life at some large corporations. "Like a lot of companies, we already buy directly from Apple and get massive discounts," said Rob McPhee, a development engineer in the imaging systems department at Du Pont Co. in Wilmington, Del.

No real competition

Nervous dealers said they had assurances from Apple that its direct marketing program would not cut into their business. For instance, all products in the catalog will be listed at their suggested retail price. "Apple has assured us that the prices they offer corporate customers won't compete with what we can offer. So as long as it doesn't affect our allocation of products and helps Apple be a stronger player, we're all for it," said Steve Taylor, a spokesman for Computerland Corp. in Pleasanton, Calif.

lysts said Apple may miss the boat on generating large PC mail-order sales.

Vendor catalog sales are expected to grow from \$3.8 billion this year to \$4.4 billion in 1995, but their percentage of the total PC market is projected to drop from 8.1% today to about 6% during the same period, according to researchers at Merrin Information Services, Inc., a distribution-oriented research firm in

Banyan introduces network services for NetWare

BY MICHELE DOSTERT
CW STAFF

NEW YORK — Banyan Systems, Inc. in Westboro, Mass., last week made good on earlier promises by announcing a suite of network service products that will run on rival Novell, Inc.'s NetWare network operating system.

Banyan's Vines local-area network operating system has long featured distributed directory, messaging and security services tailored for large, multi-server LANs. These services have helped the company win a devoted following among large LAN users.

However, those customers provide only a 10% to 12% market share for Banyan, according to most analysts. That compares with an estimated 65% to 70% share for Novell.

Banyan has now adopted a new strategy: compete with Novell tooth and nail to sell LAN operating systems but cooperate with Novell to sell network service products on the NetWare platform.

"There are a lot of NetWare users who desperately want these distributed services, but they aren't going to throw away their NetWare to get them," said David Mahoney, chief executive officer at Banyan. "With Enterprise Network Services [ENS], they won't have to," Mahoney added.

Banyan's ENS for NetWare product consists of an ENS server running on an Intel platform, a NetWare Loadable Module for NetWare v3.11 or a Value-Added Process for NetWare 2.2 that runs on the NetWare server, as well as Banyan client software that allows NetWare clients to

use ENS.

The first release of ENS for NetWare will include Banyan's StreetTalk directory, Intelligent Messaging, Network Management, System Administration and Security services, as well as a variety of wide-area and server-to-server communications options.

Novell itself has promised users that its forthcoming NetWare 4.0 product will contain a distributed, multiserver directory service similar to Banyan's StreetTalk. However, some analysts said they think that Banyan's ENS products may be enthusiastically embraced by NetWare users who want distributed directory service but do not want the expense and hassle of upgrading to NetWare 4.0.

"By stratifying their product line so much, Novell has really opened the door for Banyan ser-

allow the company's products to stay competitive and affordable. In the past two years he has changed the company's business strategy from one of selling expensive machines with high profit margins to pushing high volumes of low-cost Macintoshes.

Last week, Apple announced the four-member Performa series, which marked the company's first large-scale attempt to sell through the mass market retail channel now ruled by IBM-compatibles.

vices," said Jamie Lewis, a principal analyst at The Burton Group, a Salt Lake City-based LAN research firm. "Only 25% of Novell's customers are now using NetWare 3.11, and NetWare 4.0 is such a revolutionarily different product that I think it will be 12 to 18 months [following NetWare 4.0's] introduction before we see significant movement to the 4.0 platform."

"If Banyan can do a good job of explaining the benefits of their ENS products to users, I think they could be very successful with it," he added.

Rick Inatome, president of Inacom Corp., a large Omaha-based reseller, said, "I've seen a lot of customers who have tried to downsize but have gotten burnt by the lack of tools, such as directory and security, that they need. I think my customers will be very receptive to ENS."

TWO-PHASE COMMIT SYBASE VS. ORACLE7

PROGRAMMATIC AND PROPRIETARY

```
two-phase()
{
/* open up two servers and a commit service */
dbproc_server1 = dbopen(login, databasename1);
dbproc_server2 = dbopen(login, databasename2);
dbproc_commit = open_commit(login, NULL);
/*
** prepare data for each command buffer and select a database to
** use, then start distributed transaction on commit service
*/
commid = start_xact(dbproc_commit, application, "my_xact", 2);
/*
** build transaction name and begin transactions on different
** servers
*/
build_xact_string("", "", commid, xact_string);
dbcmd(dbproc_server1, "BEGIN TRANSACTION %s", xact_string);
dbsqlxexec(dbproc_server1);
dbcmd(dbproc_server2, "BEGIN TRANSACTION %s", xact_string);
dbsqlxexec(dbproc_server2);
/* perform various updates and then.... */
/* if there is a failure on one abort all of them */
if (return_code 1 == FAIL)
{
    abort_xact(dbproc_commit, commid);
    dbcmd(dbproc_server1, "ROLLBACK TRANSACTION");
    return_code = dbsqlxexec(dbproc_server1);
    dbcmd(dbproc_server2, "ROLLBACK TRANSACTION");
    return_code = dbsqlxexec(dbproc_server2);
    if (return_code != FAIL)
    {
        remove_xact(dbproc_commit, commid, 1);
    }
}
dbexit();
exit(ERRXIT);
}
/* otherwise prepare to commit */
dbcmd(dbproc_server1, "PREPARE TRANSACTION");
dbsqlxexec(dbproc_server1);
dbcmd(dbproc_server2, "PREPARE TRANSACTION");
dbsqlxexec(dbproc_server2);
/* as before if anyone fails then abort all, otherwise commit */
if (commit_xact(dbproc_commit, commid) == FAIL)
{
    abort_xact(dbproc_commit, commid);
    error_function(); /* rollback and remove each participant */
}
dbcmd(dbproc_server1, "COMMIT TRANSACTION");
dbcmd(dbproc_server2, "COMMIT TRANSACTION");
my_sqlxexec(dbproc_server1);
my_sqlxexec(dbproc_server2);
close_commit(dbproc_commit);
dbexit();
}
/* define the subroutine which handles failure */
my_sqlxexec(dbproc, dbproc_commit, commid)
DBPROCESS *dbproc;
DBPROCESS *dbproc_commit;
commid;
{
    return_code = dbsqlxexec(dbproc);
    if (return_code != FAIL)
    {
        remove_xact(dbproc_commit, commid, 1);
    }
    return;
}
}
```

Source: D.O. McGovern and C.J. Date: "A Guide to SYBASE and SQL Server."
Addison-Wesley, 1992. Pg. 496, Fig. 27.1.

AUTOMATIC AND STANDARD

```
UPDATE SAVINGS
SET S_BALANCE = S_BALANCE - 250.00
WHERE S_DEPOSITOR = 'JONES'
UPDATE CHECKING
SET C_BALANCE = C_BALANCE + 250.00
WHERE C_DEPOSITOR = 'JONES'

COMMIT WORK;
```

Early Client/Server RDBMS products, like Sybase, don't automatically assure the consistency of distributed transactions. When related data on multiple servers must be updated by one transaction, it is up to the applications programmer to write specialized program code to do it. LOTS OF CODE. Complex, unfamiliar, error-prone system control code that has nothing to do with business applications.

ORACLE7™, the Cooperative Server RDBMS, automatically processes distributed transactions, with NO SPECIAL CODE. With ORACLE7, all it takes to update multiple servers is the same simple SQL you would use for a single-server update. ORACLE7 lets applications programmers concentrate on solving business problems rather than computer problems.

For more information on ORACLE7's simple solution to distributed Transaction Processing, call 1-800-633-1071 ext. 8187 and commit to a better solution.

ORACLE®

Software that runs on all your computers.

©1992 Oracle Corporation. ORACLE is a registered trademark and ORACLE7 is a trademark of Oracle Corporation. Sybase is a trademark of Sybase, Inc. Call for product, service, and seminar information. In Ontario or Quebec call 1-800-263-8973, elsewhere in Canada call 1-800-263-8969.

NEWS SHORTS

Olsen to leave DEC board Oct. 1

When Digital Equipment Corp. CEO-elect Robert Palmer takes over next week, current Chief Executive Officer and founder Ken Olsen will resign as a member of DEC's Board of Directors, effective Oct. 1. Olsen was slated to stay on the board until November 1993. Olsen, who will retain an office at DEC, did not comment on the change in plans.

486SX speeds up

Intel Corp. is scheduled to increase the speed of its I486SX microprocessor today, when it unveils a 33-MHz version of the chip. More than a dozen personal computer vendors, including IBM and AST Research, Inc., have announced systems based on the new chip. Meanwhile, Intel rival Advanced Micro Devices, Inc. last week boosted the speed of its Intel 80386SX clone, introducing 40-MHz versions of its AM386SX and AM386SXL microprocessors. According to AMD, the chip, when used with cache, will rival Intel's 20-MHz 486SX in performance.

Valley GOP leaders back Clinton

Some of Silicon Valley's leading Republican CEOs last week announced support for President Bush's Democratic rival, Bill Clinton. Endorsements came from Apple Computer, Inc.'s John Sculley, Hewlett-Packard Co.'s John Young, National Semiconductor Corp.'s Gil Amelio and Silicon Graphics, Inc.'s Ed McCracken. "Many of us are Republicans," Sculley said. "But as we look at the future of this country, we said we couldn't sit this one out."

Stratus study examines downtime

A new study has found out how much those annoying outages cost corporate America. According to research paid for by Stratus Computer, Inc., "unplanned computer downtime" costs U.S. businesses \$4 billion a year. The losses come from lost productivity when employees are idle as well as the loss of potential future business by dissatisfied customers, the study said.

Solbourne sells object unit

ParcPlace Systems, Inc. in Sunnyvale, Calif., a provider of object-oriented developers' software, announced the acquisition last week of Solbourne Computer, Inc.'s Object Interface Software business unit. The Solbourne unit, formed only nine months ago, develops software for building X Window System-based C++ applications. Industry analysts said the acquisition effectively makes ParcPlace the leading developer for object-oriented tools in the C++ environment.

Short takes

Systems Center, Inc. in Reston, Va., has acquired **Tan-gram Systems Corp.**'s AM:PM package for centrally distributing software to NetWare and OS/2 local-area networks as well as DOS PCs and Apple Macintosh systems. . . . **Pete Privateer**, ex-strategic product planner at **KnowledgeWare, Inc.** in Atlanta, has resurfaced as vice president of North American marketing at **Intersolv, Inc.**, a rival computer-aided software engineering company based in Rockville, Md. . . . **Wang Laboratories, Inc.** will ask a U.S. Bankruptcy Court for permission to terminate 118 real estate leases in various U.S. locations, which is expected to save \$35 million. . . . **IBM Personal Computer Co.** has named David Saxby, formerly senior vice president at Parallax Computer, Inc., the new IBM spin-off's director of server business. . . . **Apple** moved to beef up the font selection of the mainstream user with the introduction of the Apple Font Pack, a selection of 25 new fonts for \$99. . . . **Andersen Consulting** has signed a five-year extension to an outsourcing contract with Schuller International, Inc., a Denver-based subsidiary of Manville Corp. . . . **Tandy Corp.** opened a major electronic "Incredible Universe" superstore in a Portland, Ore., suburb last week.

More news shorts on page 16

Feld resigns from Perot post

BY MARK HALPER
CW STAFF

DALLAS — After just two months, former Frito-Lay, Inc. information systems chief Charles Feld has left Perot Systems Corp. to resume running his start-up consultancy.

Feld, who joined Perot July 10, resigned early this month, he said, because he missed the challenge of his own company. "I really like the idea of running to the post office to get the mail," said Feld, who founded the Feld Group earlier this year after leaving Dallas-based Frito-Lay as vice president of management information.

Perot had hired Feld as vice president of a business group charged with helping clients implement information technology strategically [CW, July 27]. Feld is widely credited with having overhauled information systems at Frito-Lay and was to have overseen similar projects for Perot clients.

Entrepreneurial bent

But Feld last week said he wanted to remain in a smaller, entrepreneurial environment that specializes in consulting rather than getting involved in running

client operations, as Perot often does.

Feld described his parting as amicable and said he had ample latitude while at Perot. "I really had a pretty broad slate to operate within that environment," he said. "It just came down to working at a major corporation on a major growth path with 1,600 people as opposed to a smaller business consisting of a couple of dozen people."

Feld is restarting the Feld Group and is bringing two Perot employees with him: Monte Jones, who joined



Feld missed challenge of start-up

Feld at Perot after leaving Chicago systems integrator Technology Solutions Corp. and who was formerly chief information officer at Kentucky Fried Chicken; and Pat Steele, a former Frito-Lay technical director who had joined the Feld Group before Perot absorbed it. Feld, Jones and Steele are all equity partners in the consultancy, which Feld hopes to expand to include about 30 employees.

Feld declined to elaborate on the financial details of his parting

except to say that he is giving up the equity share in Perot that he received when he joined the company. "It was kind of a hazy deal" with Perot, Feld said, referring to the manner in which Perot bought out the Feld Group.

He said he had not begun any major client projects at Perot, which allowed him to walk away.

Neither Perot Chairman Mort Meyerson nor President Pat Horner returned calls last week to comment on Feld's departure. It is not known whether

the firm will replace him.

Meanwhile, Feld said that as an IS consultant he will preach the virtues of client/server computing, though he sees a place for mainframes for a long time to come. "The mainframe will be the tallest, most robust server on the network," he said, noting that it should typically be used for accounting systems, large databases and network control, while smaller servers should be used for functions including order entry and inventory.

DOT sends CRS message to airlines: 'Loosen up'

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The federal government last week ordered the nation's airline reservation systems to loosen up and let users install third-party desktop systems to tap into multiple reservation and data networks.

The U.S. Department of Transportation (DOT) included the order for open systems in a new batch of regulations intended to curb some monopolistic practices of the airline-owned computerized reservation systems (CRS).

The DOT also decided against mandatory "dehosting," which would mean running the CRS service on a separate mainframe from the one used for the airline's internal CRS.

In the past, CRS vendors provided terminals or personal computers to travel agencies under contracts that forbade them to use third-party hardware or software. The new rules allow agencies to buy desktop computers on their own and access multiple CRSs.

The agency noted that this would make the CRS business

more like an information service such as CompuServe or Prodigy. "CRS vendors should be able to conduct business without compelling subscribers to acquire their equipment and software," the DOT argued.

But if the user sticks with hardware supplied by the CRS vendor, that vendor has the right to keep the travel agency captive to its own CRS, the DOT added.

A recent survey by *Travel Weekly*, a trade newspaper based in Secaucus, N.J., found that 18% of travel agency locations are interested in buying their own hardware for CRS access and 25% are interested in buying third-party software.

Compatibility assurance

CRS vendors are required to publish technical specifications so that third-party hardware and software vendors can be sure their products are compatible with the reservation systems.

The long-delayed DOT rules also extend the 1984 ban on displays biased toward the host carrier and prohibit the use of certain contract clauses that have made it very difficult for travel agencies to switch CRS vendors.

Officials at the two biggest

reservation systems, Sabre and Apollo, said the new regulations were overkill.

"It's rather unfortunate that DOT felt forced by political pressure to adopt these rules because they are generally unnecessary," said a spokesman for American Airlines' Sabre unit in Fort Worth, Texas. The political pressure came last month from a U.S. House of Representatives vote for tougher CRS rules [CW, Aug. 17].

Allan Z. Loren, president of the Covia Partnership in Rosemont, Ill., which owns the Apollo CRS, said the DOT's rules are unnecessary but "appear more reasoned than other proposals we have seen regarding our industry, including legislation in Congress."

The DOT did strengthen its requirement that CRS vendors eliminate system defaults that favor the host carrier and load data for other participating airlines in a timely fashion. But the DOT shied away from any stronger steps to eliminate the "architectural bias" that favors the airline operating the system.

"These rules will enhance the ability of carriers to compete on price and service without denying vendors the legitimate benefits of their investments and without requiring detailed management of CRS operations by the government," Secretary of Transportation Andrew H. Card Jr. said in a statement.

Electronic vote tabulation saves cash

BY THOMAS HOFFMAN
CW STAFF

NEW YORK — When U.S. congressmen Chester Atkins (D-Mass.) and Stephen Solarz (D-N.Y.) lost their respective state primaries last week, it pushed the number of incumbent congressional ousters to 19 for the year, setting a post-World War II record. Based on early returns, the same trend appears to favor the replacement of incumbent, manual voting systems.

Early users of automated electronic voting systems are reaping big benefits. For example, the state of Oklahoma is saving \$1 million in manpower that used to be spent counting paper ballots. In addition, automated voting systems can process information within minutes.

Last week, New York City and the states of Minnesota and Oklahoma successfully used automated systems to help process voter registration and tabulate votes for elections in their regions. The New York City Board of Elections last week made Staten Island (Richmond County) the third city borough to use a signature-verification imaging technology to automatically locate each voter's name in a computerized system.

Daniel DeFrancesco, executive director of the Board of Elections, said the system has dramatically shortened the long waiting lines voters have come to expect in the city.

SCRIBE, or Signature Capture, Reproduction and Imaging System for the Board of Elections, had already been used by the city in the Bronx and Brooklyn in March. Voters in Queens and Manhattan will register using the system beginning next year.

Developed by Andersen Consulting, the system uses Hewlett-Packard Co.'s Advanced Image Management software residing on an HP 9000 Model 825 server running HP/UX in a client/server configuration.

DeFrancesco said the city will probably add bar-code scanning to the system, which, based on preliminary research, could save the city a minimum of 25% in man-hours.

Based partly on SCRIBE's success, DeFrancesco is looking for additional high-tech voting opportunities. The city expects to install electronic tally systems and begin testing them by 1993. Full deployment is expected by 1994.

Success in Minnesota

Minnesota has been phasing in a vote tabulation system during the past two years. In last week's local and state primaries, an IBM Systems Network Architecture network was used to link the state's 87 counties using IBM 3270 terminals to a Unisys Corp. 2200 6011 mainframe to record the results from the state's 2.65 million registered voters. According to Tim Hanson, director of the information services division of the secretary of state's office, the system will be used in November to calculate Minnesota's presidential election results.

Last week, the state inaugurated a new election-night reporting system, written in Unisys' Mapper fourth-generation language. Hanson said the system replaces an older one that was less user-friendly and couldn't handle as much data as the Mapper system.

As each county manually enters voting results on IBM 3270 terminals, the data is uploaded by a front-end processor via modems to the mainframe, which crunches out the results.

Heavy thunderstorms throughout Minnesota last Tuesday briefly delayed communications between a handful of rural county auditors' offices and the central data center until downed phone lines could be repaired. Though Hanson said he was delighted with the

system's performance last week, he expressed concern that the state has no backup systems, such as uninterruptible power supplies, to prevent possible disasters on election night. Hanson said he hopes the state will allocate backup systems in its next budget.

The state of Oklahoma is using computerized systems for both voter registration and automated voting. The system replaced the use of paper ballots with devices that record and report votes

electronically, saving \$1 million.

According to Lance Ward, secretary of Oklahoma's State Election Board, each of Oklahoma's 77 counties uses Digital Equipment Corp. MicroVAX 3100 mini-computers to record the results from the state's 2 million registered voters.

The information is housed in databases custom-designed by Andersen Consulting and then routed over phone lines to a DEC VAX 4300 machine.

Ward said the system has paid off handsomely. After the polls closed Tuesday at 7 pm Central Standard Time, Oklahoma's voting board had results from 96% of the state's 250 precincts within two hours. Prior to using the system, Ward said it usually took two or three days to gather statewide results.



WE'RE TURNING REORGANIZATION UPSIDE DOWN ...with HIGH PERFORMANCE AT LOW COST

FDRREORG™

WHY SHOULD YOU PAY MORE?

ALL FOR \$5,000*

AUTOMATION WITH SPEED

IEBCOPY COMPRESSION

VSAM REORG

IAM REORG

COMPRESS
PDS'S

FDR OR IAM USERS
AUTOMATIC RECOVERY
TRANSPARENT
CONDITIONAL

VSAM

IDCAMS

IEBCOPY

PDS

FDRREORG™ USER EXPERIENCES

▲ Nightly VSAM reorganization reduced from 1 hour 40 minutes to 20 minutes, allowing the user to leave the on-line system available for an extra hour each night.

▲ New files added to applications automatically are eligible for reorganization. No separate IDCAMS REPRO JOB required for each new VSAM file added.

▲ More consistent performance from our CICS system that is a heavy user of VSAM KSDS files. FDRREORG automatically identifies those files with excessive CI/CA splits and reorganizes them. Files are now only reorganized when there is the need.

▲ Simulation feature allows you to identify those data sets in need of reorganization.

▲ FDRREORG's transparent IEBCOPY interface was very easy to install without modifications to our operating system. We just enabled the option, ran FDRSTART and our IEBCOPY compresses run 60 to 95% faster without JCL or control card modifications.

▲ FDRREORG eliminates scheduling headaches by automatically bypassing data sets in use and processing them as they become available. Optionally, FDRREORG waits for them at the end of the run.

▲ FDRREORG's subtask capability (up to 15 volumes simultaneously) allows hundreds of volumes to be processed in a short period of time.

▲ Significant reduction in staff time required to monitor and schedule VSAM reorganization and PDS compression. End user is no longer responsible or concerned about compression or reorganization.

	# DSN	ELAPSED	CPU	EXCPS
FDRCOPY	479	10.16M	16.01S	5197
DFDSS V2.5	479	164.39M	382.86S	447203
SAVINGS		93.8%	95.8%	98.8%

User compressed 479 data sets using FDRCOPY REORG as compared to DF/DSS (executing IEBCOPY). Data sets occupied 33585 tracks on a 3090-400s using MVS/ESA.

* Introductory USA Price First CPU
FDR or IAM User \$5,000**
Non-FDR or IAM User \$7,500**

**Good until Dec. 31, 1992

Call for a
FREE No Obligation
90 Day Trial
And A Cup

INNOVATION®
DATA PROCESSING

CORPORATE HEADQUARTERS: 275 Paterson Avenue, Little Falls, New Jersey 07424 • (201) 890-7300

EUROPEAN OFFICES:	FRANCE 01-47-69-15-15	GERMANY 089-439-2053	NETHERLANDS 036-534-1660	UNITED KINGDOM 081-905-1266	NORDIC COUNTRIES +31-36-534-1660
-------------------	--------------------------	-------------------------	-----------------------------	--------------------------------	-------------------------------------



FCC ruling opens up local loop competition

CONTINUED FROM PAGE 1

faults in the public network.

"For customers, it means they get more competition, faster," said Henry D. Levine, a Washington, D.C.-based attorney who represents several large-business customers.

For their part, users said they were looking forward to the effect on prices and service levels in a competitive local loop, if not alternative kinds of voice and data networking services as well.

"I'm not sure that new services will be as significant as the ramifications on pricing and service that competition will

bring," said Alan Phillips, president of Instant Information, Inc. in Boston, the country's largest fax-on-demand service bureau.

However, Levin suggested that a fight over interconnection rates is expected. Phone companies have 120 days to file their tariffs with the Federal Communications Commission.

Once pricing issues are ironed out, however, a quick expansion is expected in the number of businesses using alternative metropolitan-area networks. "The networks of all the [alternative carriers]

combined maybe reach into 3,000 or 4,000 buildings nationwide," Levin said. "With this, they'll be able to reach 200,000 businesses within 12 months."

MFS, for example, operates fiber-optic backbone networks in 14 cities, and predicts revenue of \$125 million, or about 55% of the competitive access market, according to MFS President Royce J. Holland (see chart page 1).

"The competitive access industry is in a similar position to that of long distance 15 years ago," Holland said.

Last week's FCC ruling quadruples the

market that alternative local-access companies can address, according to Richard Tomlinson, president of Connecticut Research in Glastonbury, Conn.

"Up to now, they've been able to address around \$500 million of the \$4 billion to \$5 billion pie for special access lines," Tomlinson said. "With this ruling, they can address half that market."

Tomlinson added that these carriers will be able to address about \$4 billion worth of the \$20 billion switched local-access market when the next FCC ruling opens local switched services to competition.

The opening of the local loop to competition would not necessarily end the need for private facilities. "We look at internal networking as competitive product," said Jeff Marshall, senior managing director of communications at Bear, Stearns & Co. in New York.

On the other hand, Marshall and other users said they look forward to competitive offerings for services such as Integrated Services Digital Network and

"CA-Realia COBOL Achieved The Highest Overall Rating"

Computerworld Buyer's Scorecard March 25, 1991

- ✓ Quality Of Technical Support
- ✓ Clean Code Production
- ✓ Ability To Increase Programmer Productivity
- ✓ Responsiveness Of Vendor Service
- ✓ Speed
- ✓ Overall Ease Of Use
- ✓ Training Required To Use Product
- ✓ Costs vs Benefits Provided By Product
- ✓ Ease Of Installation

We won.

That's what the most recent Computerworld Buyer's Scorecard of COBOL software said: CA-Realia COBOL is the highest-rated COBOL solution available.

Not Micro Focus. Or RM/COBOL. In fact, no other COBOL software could match CA-Realia COBOL's overall ease of use and technical superiority in compiling and debugging large system applications.

But you be the judge.

Call 1-800-CALL CAI today for more information on CA-Realia COBOL and the scorecard article.

With COBOL software this good, you win.

COMPUTER ASSOCIATES
Software superior by design.

CA-Realia COBOL

CA-Realia CICS

CA-Realia IMS

CA-Realia DL/1

CA-Realia 370

Computer Associates International, Inc., One Computer Associates Plaza, Islandia, NY 11788-7000 All product names referenced herein are trademarks of their respective companies ©1991 CW Publishing Inc., Framingham, MA 01701

FOR CUSTOMERS, it means they get more competition, faster."

HENRY D. LEVINE
ATTORNEY

switched video, which have been the sole province of local telephone companies.

MFS played a key role in last week's FCC ruling, which was a response to MFS' November 1989 Local Equal Access Initiative. That initiative asked the FCC and the U.S. Department of Justice to require Bell operating companies to interconnect with competitive access providers. A number of observers said the FCC interconnection plan, proposed in May, has already had a beneficial effect.

Instant Information uses MFS as a bridge to its long-distance carriers. But Phillips said MFS' ability, under last week's FCC decision, to bridge to local sites "is something we're very interested in."

Phone companies, seeing the writing on the wall, have been lowering prices for private lines and improving service responsiveness. In fact, the FCC — seemingly aware of this tactic and eager to encourage a new breed of alternative carriers into vigorous competition with local telephone monopolies — moved to keep users' choices open.

Cheryl A. Tritt, chief of the FCC's Common Carrier Bureau, said users will be able to break existing contracts with telephone companies and take a "fresh look" at competitive offerings without paying a penalty. Presumably, she said, the telephone companies will negotiate to keep those customers.

The FCC order last week dealt only with special access lines. But in a second step toward busting the local monopoly, the FCC proposed a regulation that would extend the interconnection plan to switched local transport, which affects virtually all business customers. That proceeding will take about 12 months to finish.

To ensure that the traditional telephone companies can respond to the new competitive threat, the FCC said it will give them new pricing flexibility within a price-cap system.



If They Have A Computer On Board We Can Talk To 'Em.

From supercomputers to networks of networks, interoffice or intercontinental, Cisco routers connect them all. With the world's largest installed base, and our flexible, software-driven technology, we have the products and experience to solve even the toughest internetworking problems. So call us at 1-800-859-2726. You'll see why, with Cisco routers, nothing's impossible.



Sybase: Server becomes client

But mainframe's 'transparent access' will cost users programming time

BY JEAN S. BOZMAN
CW STAFF

EMERYVILLE, Calif. — Sybase, Inc. last week turned the client/server equation on its head, saying it has found a way to make the mainframe into a client to a Unix server and minicomputer, instead of the other way around. But it will cost users extra coding time.

Sybase's Open Client for CICS tool kit allows users of IBM mainframe applications to grab

data from remote database servers on personal computer local-area networks or Unix networks. But this transparent access will come at the expense of extra programming, some analysts said.

"Sybase is providing the glue that will make client/server computing transparent and easy for the end user," said Neal Hill, a senior technology analyst at Forrester Research, Inc. in Cambridge, Mass. "But the price is that you're going to have

to write code on top of the Sybase interfaces."

Some analysts said they believe Sybase innovated Open Client by translating the downsizing trend into a host-to-LAN connectivity tool. "They're probably the first ones to do a reverse-connect product so that a CICS application can get data from a Unix database," said Donald Feinberg, a software analyst at Gartner Group, Inc. in Stamford, Conn. The technique will become more important as

downsizing becomes more widespread, he said.

At the same time, Sybase announced an enhanced Open Gateway product for IBM's DB2 relational database. Matesys Corp. in Larkspur, Calif., a developer of Microsoft Corp. Windows applications, said it plans to use the new gateway to develop "client" programs for DB2 that are identical to those for Sybase's SQL Server database.

Sybase also announced Net-Gateway for OS/2 and Open Server for OS/2. Open Client is priced from \$32,040 to \$64,040; Open Gateway is priced from \$102,530 to \$204,930. They are scheduled to ship in the fourth quarter.

Oracle users frustrated by wait for DBMS, tools

CONTINUED FROM PAGE 1

lowed by volume shipments sometime in early 1993. Oracle Chief Executive Officer Lawrence Ellison compared the phased rollout to one of IBM's early release programs under which new technology goes to experienced customers first.

Oracle has been cautious not to repeat the flawed rollout of Oracle Version 6.0 in 1989, which was caused by buggy software and poor quality control. Fourteen sites started using Oracle 7 in August 1991, followed by hundreds of sites that joined an expanded beta-test program this year.

"It's important to us to turn

over Oracle 7 [to customers] in October," Ellison said, "but there aren't a lot of customers who want to flip it on [during] the first month it's available."

Migration from Oracle Version 6.0 to Oracle 7 will take some time because users must first develop applications that take advantage of Oracle 7's distributed database features, such as stored procedures, triggers and two-phase commit. This process could take six months to a year to complete, users said.

The next set of Oracle tools includes the SQL Forms 4.0 application development kit, the SQL ReportWriter 2.0 report

generator, the Oracle Graphics 2.0 multimedia package and the BookViewer 1.0 documentation product. All were shown to industry analysts in January and again last week, but they were never formally announced. Oracle demonstrated the new tools on the exhibit floor.

Users said Oracle developers told them that SQL Forms 4.0 is taking longer to complete than expected but that selected users began beta tests of SQL ReportWriter 2.0 last month.

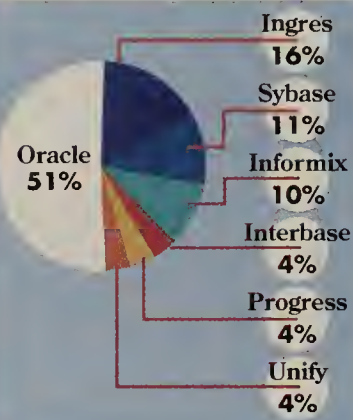
Oracle told users in March that they could begin to develop with SQL Forms 3.0, which is compatible with Oracle 7. Since then, Oracle has held training classes on how to use SQL Forms 3.0 to program for Oracle 7, including sessions at the user conference.

Many sites began developing for Oracle 7 features in June,

Riding high

Oracle remains the leader of the RDBMS pack

Percent of 1991 worldwide license revenue; Total: \$1.23B



Source: Dataquest, Inc. CW Chart: Tom Monahan

when a developer's copy of Oracle 7 was widely distributed. But development with SQL Forms 4.0 is expected to be faster.

"With the new tools, many of the forms are already set up, and you don't have to write all the triggers," said Dali Gotay, a database administrator at the U.S. Army Corps of Engineers. "It makes a big difference to the users."

Users noted that the modules in Oracle's new tool set are linked, so code can be transferred from one tool to another. The new tools support GUIs and multimedia through a common Oracle Graphics 2.0 software layer. When the new tools are shipped, Oracle users will for the first time be able to write portable applications for other relational databases, such as IBM's DB2. Until now, Oracle tools have worked only with the Oracle database.

Another product set key to Oracle 7 distributed applications also waits in the wings: Oracle's connectivity tools. SQL Net 2.0, announced one year ago, will be shipped on the same program tapes as Oracle 7, said Kenneth Jacobs, vice president of RDBMS marketing. A new group of SQL Connect programs, which link Oracle databases to other databases such as IBM's DB2, will be announced in early 1993, sources said.

Space exec lands at Oracle

After nearly two years of wearing all three top management hats at the company he founded in 1977, Lawrence J. Ellison tossed one of them to an experienced outsider. Hughes Aircraft Co. executive James Abrahamson, a former NASA administrator and director of the U.S. "Star Wars" Strategic Defense Initiative, has been named chairman of Oracle Corp.'s board.

Abrahamson, 59, will become a full-time chairman next month at \$1.18 billion Oracle. He will help direct day-to-day operations from a newly created Office of the Chairman, which he will share with Ellison, according to the company.

Ellison, 48, will retain the titles of president and chief executive officer and will focus more closely on technology issues.

Oracle also formed a five-person executive committee, including Ellison and Abrahamson, to define strategic direction and oversee worldwide operations. "The operational executives will report to me," Ellison said. "In the case of disputes, I'll cast the deciding vote."

Ellison took on the role of chairman in early 1991, following Oracle's 1990 fiscal crisis but

before Oracle announced its first-ever yearly loss in 1991. Since then, "I've been spending a good deal of my time making sure such an event never happens again," he told reporters and analysts last week. "The biggest mistake I made was not strengthening the management team." Since June, Oracle has hired several top executives from outside the company.

Abrahamson said Ellison "is giving me the charge to work on developing the culture and the infrastructure for the multibillion-dollar future Oracle has ahead of it." His extensive contacts in the aircraft and automotive industries as well as in the federal government will help Oracle gain big contracts, Wall Street analysts said.

A retired U.S. Air Force lieutenant general, Abrahamson directed NASA's Space Shuttle program from 1981 to 1984 and directed the Strategic Defense Initiative nuclear-umbrella program from 1984 to

1989. However, he playfully asked reporters and analysts "not to call me General Star Wars."

The Oracle board will meet to formally approve Abrahamson's appointment later this month.

JEAN S. BOZMAN



Ellison will focus on technology issues

More RAID subsystems for AS/400

WALTHAM, Mass. — Two weeks after IBM announced a RAID storage subsystem for the Application System/400 line, third-party firm IPL Systems, Inc. counterpunched with similar products.

IPL's 7936 Models 40 and 42 are based on low-level redundant arrays of inexpensive disks (RAID) technology and are targeted at users doing disk mirroring to build fault-tolerant-like data storage.

An early user of the products, the New England Memorial Hospital, cut six hours off monthly batch-processing time, from 18 to 12 hours, because of the quick seek time of the arrays, according to Phil Janus, assistant vice president of information services. Critical monthly reports are available a day earlier as a result, he said.

The hospital replaced 15.2G bytes of IBM-supplied storage with IPL's Model 40 disks "with no sacrifice of reliability, service or quality," he added.

Priced at \$46,600, Model 40 offers up to 54G bytes of storage, while Model 42 holds up to 27G bytes and is priced at \$34,200.

IPL, which specializes in storage products for IBM midrange and RISC System/6000 systems, promised more advanced RAID subsystems.

KIM S. NASH

CORRECTIONS

A story in the Sept. 14 issue of *Computerworld* on Apple Computer, Inc.'s new Performa systems should have said that the Macintosh IICI will be replaced with the IIVX and that a new model, the IIVI, will also be added.

Oracle Corp. received \$80 million in financing from Nippon Steel Corp., not \$200 million as was reported in the Sept. 14 issue.

A callout in a story in the Sept. 14 issue of *Computerworld* incorrectly identified Brian Dehn as a Legent Corp. employee. Dehn actually works at TransAmerican Insurance Group in Woodland Hills, Calif.

A story in the Sept. 7 issue incorrectly identified a product acquired by Computer Associates International, Inc. from Stuart P. Orr & Associates. The product, Advanced Business Software, is a set of financial, distribution and manufacturing accounting packages.



From The Mainframe To The Workstation... The Micro Focus Client/Server Solutions.

You've invested a lot of time and money in your mission-critical COBOL applications and in the people who develop and maintain them. Micro Focus makes it possible for you to leverage these assets and take advantage of the latest client/server technologies.

Micro Focus COBOL™ products provide outstanding performance and application portability across a wide range of platforms -- from DOS and OS/2® PCs to market-leading UNIX®-based machines. Based on COBOL, existing skills can immediately be put to use without retraining and the resulting systems are easily maintained.

The Micro Focus Solutions combine mainframe compatibility with state-of-the-art programming tools that maximize productivity, code reusability and let you overcome the challenges of client/server applications development.



Micro Focus products address GUIs, distributed data services and connectivity. Micro Focus **Dialog System™** allows you to develop graphical user interfaces for Microsoft® Windows™, OS/2 Presentation Manager™ and OSF Motif™ environments.

Other tools ensure mainframe-level data integrity in standalone and networked applications while a protocol-independent API, shields your team from the intricacies of communications programming.

Use existing COBOL skills to put client/server computing to work for you today.

Call 800-872-6265 for an invitation to a Micro Focus Application Development Seminar and discover: A Better Way Of Programming™.

MICRO FOCUS

Micro Focus Inc., 2465 East Bayshore Road, Palo Alto, CA 94303. Tel. (415) 856-4161

Micro Focus is a registered trademark. A Better Way of Programming, Micro Focus COBOL and Dialog System are trademarks of Micro Focus.

Other referenced trademarks are property of their respective companies.

GSA Number GS00K90AGS5251-PS02.

IBM enhances PS/2; low-end line debated

BY CAROL HILDEBRAND
CW STAFF

NEW YORK — Today's anticipated announcement of an enhanced Personal System/2 line is making diehard IBM users happy, but analysts questioned whether IBM Personal Computer Co. missed the boat by delaying its long-awaited ValuePoint announcement until the end of next month.

The ValuePoint is IBM's entry-level offering for corporate buyers.

"It doesn't make any sense," said Jeffrey Henning, a senior industry analyst at BIS Strategic Decisions in Norwell, Mass. "If they didn't want to bunch their announcements, they should have pushed back the PS/2 line, not the ValuePoint."

The company is following up on a strategy aimed at targeting three different PC families at separate customers by differentiating on distribution, price and

service and support. With its PS/1 line — aimed at the home market via mass merchandisers [CW, Sept. 14] — already out the door, IBM had originally planned a massive announcement today for both its premium line, the PS/2, and the ValuePoint line. But the company is pushing back the delivery date of ValuePoint. Analysts said the decision came from a combination of a parts shortage and a desire by IBM to let each line and brand team have its own separate moment in the sun.

Analysts said that even though the ValuePoint line is bound to cannibalize PS/2 business, IBM should make tracks in getting it out the door. The company badly needs a revitalization of user support for its PC division. In fact, International Data Corp. recently estimated that for the first time, Apple Computer, Inc. shipped more units than IBM did last quarter because IBM has lost so many users to

competitors such as Compaq Computer Corp. and Dell Computer Corp.

Joseph Trickey, PC coordinator at Stratton-Cheeseman Management Co. in East Lansing, Mich., is one customer who said he would like to see the ValuePoint line. Although he said he expects the Model 56 will stay a part of his purchasing plans, "I wouldn't be surprised if the ValuePoint line might be what we buy a majority of."

Others have less of a sense of urgency. Charles Darnell, chief executive officer of Lithonia Lighting in Conyers, Ga., said he is more interested in the ValuePoints. "I think that [IBM] needs it more than we do. I think the customer base has learned to wait a beat or two longer before reacting to change because prices keep going down, and function keeps going up."

The new PS/2s are aimed at the corporate high end. All of the new boxes will be Micro Channel Architecture-based, with Small Computer Systems Interface adapters and enhanced Extended Graphics Array. Also standard will be 8M bytes of random-access memory, as well as OS/2 preloaded (see story above).

Family values

IBM's PS/2 extensions are expected to include the following:

- **Models 56 and 57:** New systems that feature IBM's clock-doubling 486SLC2/50 chip.
- **Models 85 and 95:** The 85 is a new low-end server designed around the 33-MHz 486DX chip. It will not have the power and upgradability of the Model 95, of which there should also be two new entries. The Model 85 will replace the Model 80.
- **Models 76 and 77:** The Model 76 will be a 33-MHz 486SX box with a 3- by 3-slot/bay configuration; the Model 77 will have a similar box, as well as a 486DX2 33/66 machine with a 5- by 4-slot/bay choice. They replace the Model 70.

Pricing was not available, but sources said the new systems would cost roughly the same as current products. All of the new models comply with the International Standards Organization's ergonomic health standards, as do the three new monitors that will also be announced.

Another new twist will be an unprecedented three-year warranty on the machines, which brought cheers from users.

"A three-year warranty would make us very happy and hopefully would reduce maintenance costs," said Bruce Linker, assistant vice president of group information technology at Dean Witter Reynolds.

However, many analysts said they were confused about how the two lines could be differentiated enough to keep the PS/2 viable. With the ValuePoint expected to be exclusively AT bus-based, "the bottom line is, I don't think the Micro Channel can be sustained," Forrester Research, Inc. analyst William Bluestein noted.

Micro giants duel at CAMP conference

CONTINUED FROM PAGE 1

run on OS/2, AIX and Pink, the object-oriented operating system it is building with Apple Computer, Inc., and pointed toward plans to add multimedia extensions, support for Windows 3.1 applications and compact disc/read-only memory distribution.

CAMP members, drawn from large and medium-size corporations in the Great Lakes region,

reacted favorably to the Microsoft demo, though many called it "glitz." Still, some were swayed.

"That blew us away — it really makes you change the way you think about the future," said Michael J. Henderson, personal computer coordinator at James River Corp.'s Neenah Technical Center in Neenah, Wis.

Henderson said Windows is on some 15% of James River's desktop machines and is making further inroads.

Windows, in fact, seemed to be the front-end choice of the future for a majority of the large users in attendance, but OS/2 enjoys a strong presence, particularly as a back end among CAMP membership.

And attendees kept the Mi-

crosoft product fireworks in perspective.

"It was glitzy and very impressive," said James R. Murdock, research and systems integration consultant at a major Midwestern insurer, "but we're going ahead with OS/2." Murdock said he expects to get similar multimedia and data transfer features from vendors that support OS/2.

In his demonstration, Ballmer freely swapped files among systems loaded with DOS, Windows and NT, using the ClipBook and network .DDE feature in Windows for Workgroup Computing. He automatically upgraded schedules through an electronic-mail function, and a file updated in FoxPro for Windows automatically updated a file in Excel, which in turn changed a chart being used in a presentation.

Also demonstrated were beta-test versions of Rumba NT, Microsoft Video for Windows, which captures full-motion video, and Sound System, a 16-bit sound card Microsoft introduced last week. Ballmer said everything he demonstrated would ship by the end of first-quarter 1993.

While users at CAMP said they liked the interoperability presented by Windows for Workgroup computing and NT, its multimedia aspects were met with some skepticism.

Ashvin D. Dave, director of database and technical services at Midas International, Inc. in Chicago, said, "We're a conservative company, and what he showed takes a different mindset than what we have."

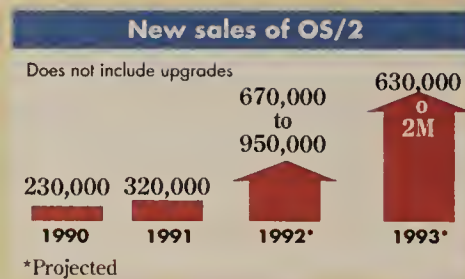
Dell to start bundling OS/2; analysts nix trend notion

BY CAROL HILDEBRAND
CW STAFF

AUSTIN, Texas — Dell Computer Corp. became the largest U.S.-based vendor besides IBM to raise the OS/2 standard, announcing last week that it will make the operating system available preloaded on its personal computers. However, the bundling deal is unlikely to spur OS/2 sales.

Hopeful signs

After a sluggish start, IBM's OS/2 appears to be picking up steam



Source: Gartner Group, Inc.

A Dell spokesman said the offer was prompted by user interest and Dell's desire to be a one-stop shopping mecca. "Clearly, we've been seeing some customer demand for it, but it's also a goal to have a good variety of options for customers to choose from," he said.

Dell now offers seven operating systems preinstalled on its PCs, including Microsoft Corp.'s Windows environment. The

spokesman said that although he had no estimates on the number of OS/2 machines the firm expects to ship, he thought the bundling would be evenly weighted between servers and desktop units.

Currently, U.S.-based Reply Corp. and Europe-based ICL and Ing. C. Olivetti & Co. are the only firms other than IBM that bundle OS/2. AST Research, Inc. said it did not have any near-term plans to bundle the operating system. Likewise, Compaq Computer Corp. and Everex Systems, Inc. said they did not have any immediate plans.

Analysts said that although the move may indicate a trend, it is more a reflection of a general push toward software bundling by hardware companies than a signal that OS/2 is on the rise.

"We're seeing a demand to have more and more software bundled," said Matthew Cain, an analyst at Meta Group, Inc. in Westport, Conn. "I think what Dell is doing is that for a very little incremental investment, they can offer an option that will be attractive to large corporate buyers."

Christopher Lindquist and Michael Fitzgerald contributed to this story.

IBM, Microsoft cross swords

BOSTON — If you were looking for an answer to the Windows New Technology (NT) vs. OS/2 question, you would have walked away frustrated from the World Trade Center, the scene of just such a debate between IBM's John Soyering and Microsoft Corp.'s Adam Walkes.

Panelists and attendees — the majority of whom were independent developers — seemed to prefer IBM's OS/2. But when pressed, four of the five panelists, who included technical journalist Will Zachman, acknowledged they would opt for Microsoft's Windows, mostly because they had mouths to feed and bills to pay.

Not that they seemed happy

about the decision. In fact, anti-Microsoft sentiment was high. Secret application programming interfaces (API), buggy preliminary releases and 15-minute waits for telephone support — on the caller's dime — were only a few of the accusations voiced by outraged audience members.

Soyering looked a little stronger, announcing the improved phone support and the availability of documentation for any OS/2 API. He even leaked information about an unannounced \$1,800 C++ compiler. But as one audience member put it, "We probably wouldn't even be having this debate if OS/2 cost \$65 per copy" in its first release.

MARY BRANDEL

"THE TASK IS TO INTEGRATE THE OLD AND THE NEW."

Hellmuth, Obata & Kassabaum, Architects

To a great extent, the day of the bulldozer is over.

Buildings, like the historic St. Louis Union Station, are saved. And made even more valuable by putting them to new uses. Architects call it "adaptive re-use."

There are parallels in computing.

Mainframes are saved. And made even more valuable by becoming part of the on-line enterprise. Software architects call it "mainframe integration."

There is one software architecture that is designed to integrate the old and the new: Sybase.

Sybase integrates any CICS application and data source—IMS, VSAM, DB2 and more—into an advanced client/server computing environment. The mainframe becomes a high performance server in a network of PCs, workstations and minicomputers.

Sybase. Client/server architecture for the on-line enterprise.

To find out more about our database, application development and connectivity products, and multi-vendor consulting services, call 1-800-8-SYBASE.

©1991 Sybase, Inc.

Once among the world's busiest train stations, the old St. Louis Union Station has been redesigned by Hellmuth, Obata & Kassabaum into an award-winning urban complex that includes a hotel, restaurants and shopping center.

 **SYBASE**

CLIENT/SERVER ARCHITECTURE FOR THE ON-LINE ENTERPRISE

IBM LAN moves signal open approach

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — IBM's sweeping announcements in the distributed networking arena last week were interpreted as a thumbs-up sign that a reorganized IBM is evolving into a more open-minded and nimble industry player.

However, immediate gains for users accustomed to filling IBM product voids from third parties are limited, some IBM shops said.

IBM sanctioned Ethernet technology with homegrown desktop adapter cards and offered up a multiprotocol intelligent wiring hub through its partnership with Chipcom Corp. [CW, Sept. 14]. The hub has

hooks to IBM Token Ring concentrators and IBM's NetView/6000 distributed management system (see story page 15).

The company also doubled the performance of its 16/4M bit/sec. Token Ring adapters in servers and tripled it in clients, said Donald A. Haile, IBM LAN Systems' network systems director.

An IBM spokesman estimated that this would bring IBM card performance within 15% of the fastest cards on the market. These are generally considered to be from Madge Networks, Inc.

More distributed moves are expected this week from IBM in the areas of laptops, Personal

System/2s, Distributed Systems Management and mainframes and minicomputers used as servers, analysts said.

However, while "it's of interest that IBM recognizes they have to move to more open, distributed platforms, they're a little late," said Ronald W. Meyers, vice president of technical strategic planning at Bankers Trust Co. in New York. "We're already well into implementing wiring hubs and other technology providing interconnection from LANs and workstations to IBM hosts."

"Goodness no, we're not waiting for IBM to supply us with these things," said Butch Kemper, assistant director for networking and technical ser-

vices at Texas A&M University in College Station, Texas, a combined IBM Systems Network Architecture/local-area network shop using Cabletron Systems, Inc. hubs.

"If IBM wants to get down and scrap with the prices for Ethernet cards, we'll be happy to consider them. But at \$250 apiece, they're not going to sell any to me" (see pricing at right). Many vendors sell Ethernet cards in the \$100 to \$150 range.

"We'll have to wait and see how well they will compete with third parties who have been doing [distributed networking] for quite a while," added Jerry Noble, director of telecommunications and personal computer support at The American Cancer Society in Austin, Texas.

Particularly encouraging to analysts was IBM's ahead-of-the-pack rollout of industry-standard credit-card-size portable network adapter cards for the most thriving area of the PC market: portables (see story at left). IBM reportedly turned the adapters around in a six-month development cycle.

"We see concrete evidence of a more aggressive and agile IBM, particularly in the networking systems group," said Janet Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass. "IBM is usually late to market, but now they've turned around these adapters with lightning speed," she said.

IBM users, though, seemed most interested in a frame-relay access device announced by IBM for PS/2 servers in remote LAN sites.

LAN land

IBM endorsements of LAN-oriented technologies it has not previously offered could indicate the vendor has caught the distributed computing wave:

- The 8250 multiprotocol intelligent wiring hub, \$2,410 to \$4,465. Availability: Now.
- Ethernet adapter cards for XT/AT (\$250) and Micro Channel Architecture (\$395) bus computers. Availability: January 1993.
- Low-end frame-relay network access device for PS/2 LAN servers in remote sites, about \$1,600. Availability: December.
- Credit-card-size Token Ring, Ethernet and 3270 adapter cards for portable PCs conforming to emerging industry standards (see story at left).

This is because frame relay "is the technology of preference for interconnecting LANs and for having workstations gain access to central databases," Meyers said. "It would seem a natural fit to interconnect dispersed LANs via frame relay back to the mainframe."

Should The American Cancer Society turn to frame relay to fix some throughput problems it is having with Novell, Inc. IPX protocols across the satellite network it is testing, it would be important for IBM to offer the capability, said Kyle Cooper, a senior LAN analyst.

The society would need IBM support to supplement its eight-person nationwide network staff, Cooper said.

Adapters abound!

IBM's rollout last week of three credit-card-size network interfaces compatible with emerging Personal Computer Memory Card International Association (PCMCIA) standards was hailed as a sign that a more flexible, decentralized IBM is leaping behind the technology eight ball.

"PCMCIA is a brand-new technology, and boom, there they are," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C.

A \$795 Token Ring PCMCIA adapter and a \$375 Ethernet adapter are due out at the end of next month; a 3270 PCMCIA card for linking mobile users into IBM's SNA networks is scheduled for delivery in mid-December.

And while longtime Token Ring bigot IBM was rolling out its first line of PC Ethernet adapters that support all Ethernet media types, Ethernet pioneer 3Com Corp. was rejoining the

Token Ring side of the house. The firm introduced Token Ring support on its routers and three IBM-compatible adapters, which some analysts predict will prompt price wars.

Currently, prices are as follows:

- 16-bit XT/AT bus adapter: 3Com, \$695; IBM, \$845.
- 16-bit Micro Channel Architecture bus adapter: 3Com, \$745; IBM, \$895.
- 32-bit Extended Industry Standard Architecture bus adapter: 3Com, \$1,095; IBM: no product.

IBM also re-engineered its home-designed Token Ring Tropic chip for improved card performance (see story above). This is important because "generally, IBM Token Ring performance was not comparing," said Todd Dagres, vice president of communications at The Yankee Group, a Boston-based consultancy.

JOANIE M. WEXLER

Internetwork-simulation software could cut costs

Make Systems' tool aids detection of bottleneck

BY ELISABETH HORWITT
CW STAFF

MOUNTAIN VIEW, Calif. — Network asset management system vendor Make Systems, Inc. made announcements last week that may finally put sophisticated network-simulation capabilities in the hands of network managers who can no longer rely on intuition to pinpoint the source of bottlenecks.

The product is said to help users make changes to internetworked local-area network installations in order to optimize response time and resolve bottlenecks. This, in turn, will allow cost-conscious managers to get the most bang for their networking budgets, the vendor claimed.

Make's NetMaker enables users to run what-if scenarios and failure analyses to simulate

the impact of network changes and to optimize the network by testing alternate scenarios for upgrading or reconfiguring an installation, according to Make.

Network managers have traditionally made educated guesses to determine the cause of a response time problem or to find the most cost-effective way to boost network throughput, according to President Stephen Howard.

However, intuitive answers are often the wrong ones when networks reach a certain level of complexity, particularly where routers are concerned, he added.

For example, boosting the capacity of one inter-LAN link can actually hurt overall network throughput because routers may be programmed to automatically send traffic over the higher-speed link, when a more efficient

path may be available elsewhere, Howard said.

Although companies such as CACI Products Co. in La Jolla, Calif., and Internetix, Inc. in Upper Marlboro, Md., offer products with similar capabilities, what differentiates NetMaker is its ability to make those capabilities accessible to a network manager with just a little network-simulation modeling, said Stu Gavrin, a senior manager at Ernst & Young.

NetMaker, for example, uses color coding and graphics to pinpoint exactly where problems crop up during a network simulation, he added.

Device, protocol tracking

Another key component of NetMaker is a set of predefined libraries that keep track of the proprietary architectures and features of different network devices and protocols so that the

network manager need not bother with such complexities.

"All [the network manager] needs to do is key in: 'connect all unconnected nodes in the best way possible,'" and the simulator searches intelligently for the best solution, Howard said.

This type of simulation "would be useful to anyone" as a way to pinpoint network bottlenecks and fine-tune networks, said Greg Parcell, manager of floor support systems at the Chicago Board of Trade. "The question is how easy the product is to use; I'd have to see it first."

A network manager at a major Wall Street firm who has been beta-testing NetMaker testified to the product's capabilities and ease of use. "You can pick your scenarios and let it do its thing," said the manager, who requested anonymity. "There are so many different routing choices that affect the

way a network reacts, and the longer NetMaker runs, the more it knows."

By the fourth quarter, NetMaker will have libraries for the leading T1 multiplexer and router vendors, with a frame-relay library slated for the first half of 1993, Howard said.

Also available is a library of Transmission Control Protocol/Internet Protocol, with Novell, Inc.'s IPX, Digital Equipment Corp.'s DECnet and probably Apple Computer, Inc.'s AppleTalk libraries to come out in the fourth quarter, he said.

Make also plans to bring out by the fourth quarter a financial simulator with a tariff database for figuring out the costs of wide-area links, as well as a configuration designer with vendor-specific information on what components are needed for a given device.

NetMaker prices start at \$20,000 for a small network of about 20 nodes and range to \$300,000 for a large network.

IBM ups Unix net management

BY ELISABETH HORWITT
CW STAFF

NEW YORK — The second version of IBM's NetView/6000 shows promise of being the first LAN management system aimed at commercial Unix network users, observers said.

Announced last week, IBM's NetView/6000 is an AIX, RISC System/6000-based network management system that is said to manage Simple Network Management Protocol (SNMP)-compliant local-area network and internetworking devices, as well as IBM products such as the 6611 Network Processor.

Slated for delivery next June, NetView/6000 Version 2.1 adds significant value to the original Hewlett-Packard Co. OpenView-based product in the area of ease of use, said Mary Johnston, a principal analyst at Northeast Consulting Resources, Inc., a Boston-based consulting firm.

Key new features include an Open Software Foundation Motif- and X Window System-based graphical user interface; auto-discovery, which automatically maps LAN configurations; remote diagnostics; and threshold-setting and alert-filtering features that should help users winnow out the important network events from incoming information, Johnston said.

In addition, the product lays the foundation for providing the future ability to identify devices and lines that carry crucial business applications so that those links can be given priority, sources said.

With NetView/6000 Version

2.1, IBM is beginning to provide network managers with the troubleshooting capabilities they need to support the growing number of commercial Unix networks running crucial business applications, said John Payne, a communications architect at DHL Worldwide Express who beta-tested the product.

While engineering users with their own Unix workstations can go on working during a network failure, LAN outages can be disastrous for corporations where X terminal users run crucial business applications on Unix servers, Payne said.

NetView/6000 Version 2.1 only begins to provide such capabilities. Still, it lays the groundwork for future products that will enable managers to rapidly pinpoint the source of a network problem — be it a physical network device, a transport protocol, a server or an application, Payne said.

Also important is the product's object orientation and new end-user application programming interface (API), which should make it easier for independent software vendors to deliver applications on the platform, Johnston said.

IBM announced five additional companies committed to implementing their network management applications on NetView/6000: Novell, Inc.; Cabletron Systems, Inc.; Ki Research, Inc. in Columbia, Md. (Digital Equipment Corp.'s DECnet net-

work management); Elegant Communications, Inc. in Toronto (Unix systems management); and International TeleManagement Corp. in Vienna, Va. (management of non-SNMP network devices, such as T1 multiplexers).

Existing supporters include Chipcom Corp., Fibermux Corp., HP, Network Equipment Technologies, Inc., Proteon, Inc., Ungermann-Bass, Inc. and Wellfleet Communications, Inc.

IBM also announced AIX Net-

View Hub Management Program/6000, which is said to manage IBM 8250 Multiprotocol Intelligent Hubs announced last week; and AIX Systems Monitor/6000, which is said to

enable managed Unix systems to automatically send crucial network management data to a NetView/6000 system.

In a statement of direction, IBM said it would provide a trouble-ticket application that would enable the system to track problems through to resolution.

IBM also said NetView/6000 will take on the LAN media management capabilities of IBM's OS/2-based LAN Network Manager product sometime next year. This is part of IBM's strategy to provide users with a choice of two LAN management platforms with similar capabilities, one for Unix and the other for OS/2, Johnston said.

NetView/6000 Version 2.1 is priced at \$15,650.

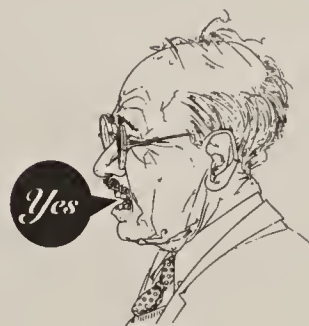


Can your company stay in business without business re-engineering?

Maybe



A



B



C

D

I don't know
...what is it, exactly?

SynOptics to replace LattisNet Manager

BY JOANIE M. WEXLER
CW STAFF

SANTA CLARA, Calif. — With competition continuing to heat up in the Unix-based distributed network management market, SynOptics Communications, Inc. said it intends to announce today a comprehensive replacement for its LattisNet Manager for Unix.

The more integrated, broad-reaching system, dubbed Optivity, reportedly leverages intelligence in SynOptics hubs to trace the path a data packet takes from one end station to another across local- and wide-area networks. The SunNet Manager-based core application allows users to plug in other SunNet Manager-based applications from both SynOptics and other vendors for more sophisticated management of a particular community of Simple Network Management Protocol (SNMP)-based devices,

the vendor said.

For example, Cisco Systems, Inc.'s CiscoWorks, announced last week for close scrutiny of router networks, runs on SunNet Manager and could plug into Optivity.

Three applications from SynOptics, also set to be announced today, allow the enterprise network fabric to be managed at two levels: by network experts and by less-technical network operators, said Clive A. Hallatt, SynOptics' product marketing manager. These applications are aimed at closely managing bridges, routers and data paths between devices.

Info at hand

"This first trio of applications puts a lot of information visually on the screen," observed Michael Howard, president of Infonetics Research, Inc., a San Jose, Calif.-based consultancy.

He said SynOptics seems to

be following a trend that he discovered in a recent network management study his firm conducted: "What people want are tools that reduce problem-resolution time and that less-experienced people can use."

The competition

Like competitor Cabletron Systems, Inc.'s Spectrum management tool, the system features a hierarchical polling approach to keep enterprise polling traffic to a minimum.

Unlike Spectrum, however, which manages any SNMP network regardless of whether Cabletron hubs are in it, Optivity is optimized for SynOptics hubs being in the network.

Optivity, slated to ship late next month, costs \$4,995 plus the cost of the SunNet Manager platform. The three applications to be announced this week from the vendor range in price from \$2,500 to \$3,500 each.

Most managers are trying to re-engineer their company's business to stay competitive. If you're one of them, just fax or call us and we'll send you a thought-provoking interactive disk that gets to the heart of today's information issues. Next step? We'll help you develop a plan for tomorrow's information systems. Only from D&B Software.

A ☐ B ☐ C ☐ D ☐

1 (800) 321-6896

FAX BACK

for **FREE** D&B Software Desktop Diagnosis Disk.

Or call 1 (800) 321-6897 ext.200

Name

Title/Firm

Address

Fax

Phone

D&B SOFTWARE

Dun & Bradstreet Software

D&B a company of
The Dun & Bradstreet Corporation

NEWS SHORTS

Microsoft releases sound system

Microsoft Corp. is once again dipping its toe into the hardware waters with the release of the Windows Sound System, a combination of sound card and software that adds sound reproduction, storage and voice-recognition capabilities to Windows workstations. The \$289 product offers a synthesizer, sound chip, connectors for microphone-in, line-in, headphones-out and line-out as well as headphones and a microphone. Also included are utilities to browse sound libraries, record sounds, proofread Lotus Development Corp.'s 1-2-3 for Windows and Microsoft's Excel and perform voice-activated macros in Windows applications.

Frame relay hits milestone

Frame-relay technology took a big step forward last week when the Frame Relay Forum ratified the Network-to-Network Interface specification. The move provides the industry with a standard mechanism for allowing disparate frame-relay networks to interoperate. This means users can extend the reach of their networks among any combination of private networks and public frame-relay services.

Internetworking Sniffer on its way

Network General Corp. in Menlo Park, Calif., this week is expected to announce Expert Sniffer Internetwork Analyzer, which it claims is the first product to analyze internetworking traffic traveling between proprietary routers. It is said to monitor traffic in real time, identify network throughput or connectivity problems and perform protocol and traffic analysis to pinpoint problem sources. An optional expert system does the analysis and explains the results. Priced at \$15,500, a version minus the expert system is slated to ship in the fourth quarter.

Andersen closes big CASE deal

Andersen Consulting recently closed a deal with the state of North Carolina for \$1 million worth of Foundation Cooperative Processing (FCP) computer-aided software engineering tools. Grand plans for FCP include rewriting major mainframe applications to run in client/server mode. More than 2,500 users, linked via 200 local-area networks, will be blasted into the future with programs such as Microsoft's Word and Excel.

Informix adds NLM

Informix Software, Inc. said last week it will ship a NetWare Loadable Module (NLM) version of its Informix OnLine relational database for Novell, Inc.'s NetWare 3.1.1 network operating system. The NLM version, which is slated to ship by Oct. 1, will compete against other NLM databases from Oracle Corp., Sybase, Inc. and Gupta Technologies, Inc. Prices for the Informix NLM range from \$4,995 for a 16-user version to \$16,995 for an unlimited number of users.

Short takes

SunSelect, a business unit of Sun Microsystems, Inc., last week acquired the assets of Praxsys Technologies, Inc., a software development firm specializing in personal computer emulation technology. . . . **Start-up Cascade Communications Corp.** in Westford, Mass., last week announced that nationwide network services provider **Performance Systems International, Inc.** has signed a five-year, \$10 million contract for Cascade frame-relay feeder switches. . . . **Everex Systems, Inc.** cut its prices by up to 59%, including cuts up to 47% on the Tempo series. . . . Robert W. Lucky, a top executive at AT&T Bell Laboratories, has been named vice president of applied research at **Bell Communications Research**, the regional operating companies' jointly held research and development arm. . . . The consolidation of six claims-processing systems into one at **Blue Cross/Blue Shield** of Massachusetts eliminated 68 of about 500 information systems jobs. . . . **The Object Management Group** announced that the Petrochemical Open Software Corp. will include the Common Object Request Broker Architecture technology in its application programming interface specifications.

Global buffering beefs up Rdb

BY MELINDA-CAROL BALLOU
CW STAFF

ORLANDO, Fla. — Digital Equipment Corp. laid out a relational database management system strategy at the Rdb World Conference earlier this month that includes new versions of Rdb, migration support for the next-generation of 64-bit Alpha platforms and database-access products.

DEC began shipping Version 4.1 of Rdb in June. It features global buffering for improved data access, direct support of optical jukeboxes and capabilities that allow users to install a new version of the database while maintaining older versions elsewhere on a VAXcluster. DEC expects to release Version 4.2 before the end of this year. It will include MultiVendor Integration Architecture support and performance improvements for multimedia.

Users said they are content with the most recent Rdb release.

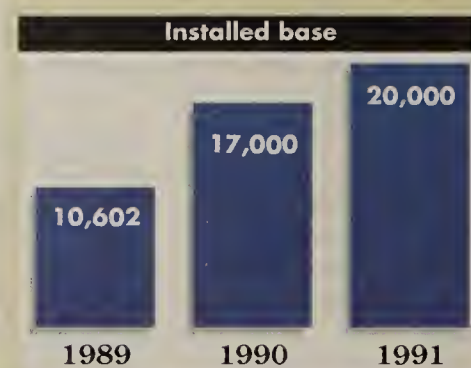
"Version 4.1 brought terrific performance improvements with the global buffering," said Tim Mueller, chairman of the Digital Equipment Computer Users Group Database Special Interest Group. "They also changed the way commits are assumed. Before, a transaction had to be written to the database first, but now it's committed once you've finished journaling and written to the database, which saves time."

"The global buffering is the

biggest advantage to us," added Martin Keiser, a senior specialist at Du Pont Co., which is in the process of making the transition to 4.1. "We're able to curb back on the total memory that's used since users are able to share similar, buffered data."

Stacked DEC

Licensing of DEC's Rdb has grown briskly during the past few years



Source: International Data Corp. CW Chart: Michael Siggins

DEC will ultimately redesign Rdb to take better advantage of Alpha's 64-bit architecture, the officials added. And while DEC emphasized the advantages of Alpha, users expressed cautious interest.

"We would love to move to Alpha, but the layered software products aren't going to be out for a while, and we use ACMS," said Mark Lesko, project leader of the computer repair business information systems group at Lockheed Missiles and Space Co., which is based in Sunnyvale, Calif. DEC plans to stagger the release of layered software on a quarterly basis. Full VAXcluster

support for DEC's Application Control Management System (ACMS) transaction processing monitor is not scheduled to be available on Alpha Open VMS platforms until early 1994.

DEC officials said sites can use SQL Services to access Rdb from non-VMS platforms via DEC's Network Architecture Support (NAS). This opens up to VMS users the wider world of IBM's Systems Network Architecture, Transmission Control Protocol/Internet Protocol, Open Systems Interconnect and LAN Manager, with support for Novell, Inc. soon to follow. Rdb will be ported to OSF/1, Microsoft Corp.'s Windows New Technology and other unannounced platforms, they added.

DEC officials also spoke about the remnants of the earlier RdbStar distributed database technology, now referred to as the Information Network. They hope to release a version of the product by early 1993 that will act as a manager of heterogeneous RDBMSs so that users will be able to access and manage data located across a range of databases [CW, June 29].

Current DEC offerings in this area include Accessworks products, which offer read access to IBM's VSAM files, DB/2 and Oracle Corp. databases and read/write access to RMS files.

Artisoft adds TCP/IP, Macintosh support

BY MICHELE DOSTERT
CW STAFF

TUCSON, Ariz. — In a major expansion of its client support strategy, Artisoft, Inc., a peer-to-peer personal computer networking provider, said it is developing software for Transmission Control Protocol/Internet Protocol (TCP/IP) connectivity. The company is also shipping its LANtastic for Macintosh Connectivity System.

"We now support DOS, Windows and Macintosh; our TCP/IP product will ship this fall, and we are working on a native OS/2 version of LANtastic," said Joe Waldego, marketing manager for LANtastic.

By expanding its client connectivity options, Artisoft may be trying a preemptive strike against Microsoft Corp.'s Windows for Workgroups product, which, when it appears, will have

peer-to-peer connectivity.

Jodi Mardesich, a San Francisco-based analyst at local-area network research firm The Burton Group, said, "Expanded connectivity or not, most large corporations are choosing client/

ARTISOFT MAY BE trying a preemptive strike against Microsoft's Windows for Workgroups product.

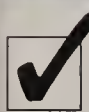
server, not peer-to-peer, LAN network operating systems. These announcements may help Artisoft defend its workgroup and small-office client base against Workgroup for Windows, but I don't think it's going

to move them out of their small-site niche."

Artisoft is working with The Wollongong Group, Inc., a Palo Alto, Calif.-based provider of Unix-based connectivity products, to develop its LANtastic for the TCP/IP Connectivity System package. It was designed to let a workstation on a LANtastic network access a wide range of systems throughout the network, including Digital Equipment Corp.'s VAX, workstations from Hewlett-Packard Co. and Sun Microsystems, Inc., IBM mainframes and AT&T/NCR Corp. minis.

LANtastic for TCP/IP will support TCP/IP applications such as Telnet terminal emulations and File Transfer Protocol.

Artisoft's LANtastic for Macintosh Connectivity system reportedly allows for transparent integration of Macintosh computers and PostScript printers into a LANtastic network. Using a dedicated PC as a gateway, it displays PC servers as logical drives on Macintoshes. PC users, meanwhile, can access Macintosh files that have been saved onto the gateway PC.



YES!

I want to attend the next free, half-day InterBase seminar in my area.

INTERBASE™

Borland International, Inc.

To register for a seminar, please call
1-800-245-7367.

Or, fill out this coupon and drop it in the mail.

☐ Register me for the seminar I've checked.

☐ I can't attend a seminar, but I'd like
product information.

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ FAX _____

**Locations
and
Dates**

Atlanta ☐ 11/12

Boston ☐ 11/10

Dallas ☐ 11/18

Minneapolis ☐ 11/17

New York City ☐ 11/11

Torrance/Los Angeles ☐ 11/19

Santa Clara ☐ 11/20

Washington, D.C. ☐ 11/13

B O R L A N D

Copyright © 1992 Borland International, Inc. ■ BI 4390.1

6955



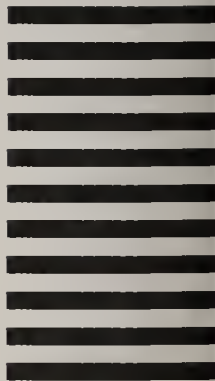
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 200 SCOTTS VALLEY, CA

POSTAGE WILL BE PAID BY ADDRESSEE

BORLAND INTERNATIONAL INC
INTERBASE BUSINESS UNIT
PO BOX 660019
SCOTTS VALLEY CA 95067-9930



**RDBMS
Performance**

**OLTP
Oracle**

**OLCP
InterBase**

**OLTP
Sybase**

Borland
Modular & Sequential
Triggers
BLOB Filters
Multidimensional
Arrays
Peer-to-peer
Multigenerational
Architecture

Seven reasons why InterBase towers over the competition

1. OLCP vs. OLTP

Borland's InterBase™ is the only high-performance relational database server that satisfies your real-world demands for On-Line Complex Processing (OLCP). InterBase's OLCP capabilities maximize throughput by supporting both short, OLTP-type transactions and long, data-intensive analytic transactions. And you can count on great performance even when transactions involve distributed and complex data.

2. Multigenerational architecture

InterBase outperforms all other databases in real-world applications. Its unique multi-generational architecture results in the fastest response times in mixed read/write situations. And writers aren't locked out by readers.

3. Two-phase commit guarantees integrity

InterBase's unique "peer-to-peer" architecture dramatically improves network performance because frequently used data can be stored locally, while maintaining access to all data anywhere on the network. Built-in two-phase commit protects your data from duplication,

The Competitive Edge

	InterBase	Oracle	Sybase
Integrated event alerters	Yes	No	No
Modular, sequenceable triggers	Yes	No	No
BLOB filters	Yes	No	No
Multidimensional arrays	Yes	No	No
Peer-to-peer architecture w/two-phase commit	Yes	No	No
Multigenerational architecture	Yes	No	No
OLCP	Yes	No	No

loss, and concurrency problems in distributed, peer-to-peer configurations.

4. Multidimensional arrays for high-performance read/write

InterBase's multidimensional arrays store and retrieve data 10 to 40 times faster than traditional row-and-column formats. Plus, indexed arrays make it far easier for developers to build and maintain applications.

5. BLOB filters optimize complex data

InterBase sets the standard for support of Binary Large Objects (BLOBs). Any length and type of data can be stored—text, graphics, sound, video, and even raw data from scientific instruments. And special BLOB filters let you compress and translate data, making InterBase the *only* database for handling complex data.

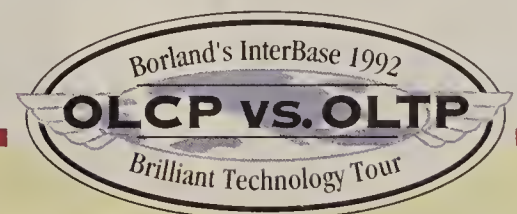
6. Easy code generation and guaranteed data integrity

No one provides better tools for maintaining data integrity and monitoring critical data.

Modular, sequenceable triggers are ideal for enforcing referential integrity and other business rules. Event alerters guarantee real-time notification when data changes while minimizing network traffic and use of system resources. Only InterBase event alerters are under transaction control—guaranteeing data integrity.

7. The power of Borland is behind InterBase

Your investment in InterBase is backed by Borland International, Inc., the company that is #1 in database technology and #1 in customer satisfaction.



Event Alert!

Don't miss the Borland InterBase seminar coming soon. Fill in and return the attached response card today! Or, for more information on InterBase and seminar registration,

call now!

1-800-245-7367

or call (408) 431-5429

B O R L A N D


The Leader in Object-Oriented Programming

Copyright © 1992 Borland International, Inc. All rights reserved. InterBase is a trademark of Borland International, Inc. BI 1559



PS/2

WTTL was conducted against 386 SX and 386 DX systems. **Sale or delivery of the IBM PS/2 486SLC2 Processor Upgrade is subject to FCC approval. Planned availability of the IBM PS/2 486SLC2 Processor Upgrade 4th quarter 1992. Offer available from June 11 through October 1, 1992. HelpWare available only in U.S.A. IBM, PS/2 and OS/2 are registered trademarks and HelpWare and Help Center are trademarks of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation. © 1992 IBM Corp.



This PS/2 SLC is so fast, it comes with its own speeding ticket.

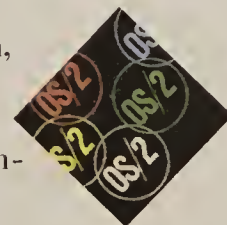
With our advanced SLC processor, the PS/2® Models 56 and 57 are clearly on a fast track. They're already the fastest systems in their class.* And with this special IBM PS/2 486SLC2 Processor Upgrade, we plan to keep them that way.

Buy a PS/2 Model 56 or 57 SLC before October 1, 1992, and you'll get information on how to upgrade to our powerful 486SLC2 processor at a special low price of \$259**

486SLC2 Power
for \$259**

OS/2® 2.0 comes pre-installed on both models, so you can run DOS, Windows™ and OS/2 applications. And every PS/2 comes with HelpWare™, a full range of services and support including a toll-free number.

The PS/2 Models 56 and 57 offer so much, other computers might as well hit the road. For more information about our specially priced 486SLC2 upgrade or for the IBM authorized dealer near you, call our HelpCenter™ at 1 800 PS2-2227.



- PS/2 486SLC2 Processor Upgrade for just \$259.
- Faster than any system in its class.
- Comes pre-installed with IBM OS/2 2.0.
- **HelpWare:** services and support nobody else can touch.
- To learn more about our 486SLC2 upgrade, call 1 800 PS2-2227.



HP gives Unix minis a power boost

BY MARK HALPER
CW STAFF

PALO ALTO, Calif. — Hewlett-Packard Co. last week upped the performance range on its line of Unix minicomputers, adding two models based on the latest and fastest version of its Precision Architecture-RISC microprocessor.

At the same time, HP released a new version of HP/UX, its Unix operating system, and said it is adding Fiber Distributed Data Interface (FDDI) connectivity to its entire family of Unix minicomputers.

The new HP 9000 Models 897S and 887S mark the second time HP has incorporated the 96-MHz 7100 PA-RISC chip into one of its products. Last month, HP added 7100-based models to its HP 3000 line of proprietary minicomputers.

Power surge

HP is billing the 897S as its top-of-the-line departmental business server, operating at up to 184 transactions per second based on the Transaction Processing Council's "A" benchmark. HP's departmental offerings previously topped out at 110.5 transactions per second based on the benchmark. The

company claimed that, based on the council's "A" rating, the Model 897S performs up to three times faster than IBM's Application System/400 and 50% faster than Digital Equipment Corp.'s fastest single-processor VAXserver Model 610.

One analyst noted that while users may not have an immediate need for the leap in power, the addition of the 7100 PA-RISC-based machines gives

them the ability to upgrade.

"Users always want to make sure there's a high end to grow into," noted John Logan, executive vice president of the Boston-based consulting firm Aberdeen Group. "This will make users feel safe; there's a growth path."

HP is not positioning the machine for enterprise computing but will instead continue to pitch its 4-month-old line of Corporate Business Systems.

Gary Lemke, product marketing manager at HP's General Systems Division, said HP will add the 7100 to the Corporate Business System line sometime next year.

Meanwhile, pricing starts at \$112,000 for the 897S and at \$92,000 for the 887S. The company is charging \$35,000 to upgrade from an 867 to an 887 or from an 877 to an 897.

Both new models support up to 1,850 users and will be available next month. The 897S includes 12 I/O slots; the 887S has

six. Maximum storage on the 897S is 144.5G bytes; on the 887S, it is 139.1G bytes. Both come standard with 64M bytes of random-access memory, expandable to 768M bytes.

HP/UX Version 9.0, introduced by HP last week, includes HP's Visual User Environment 3.0. HP is marketing Version 9.0 for use with its workstation line as well as its minis.

FDDI for the 9000 line of Unix servers will be available in December, with pricing from \$4,495 to \$15,995.

AST to offer highly upgradable notebook

BY MICHAEL FITZGERALD
CW STAFF

IRVINE, Calif. — AST Research, Inc. will today announce its next-generation notebook — possibly the most upgradable notebook computer ever to hit the market.

AST's 5.9-pound PowerExec will let users upgrade the processor, the screen and the hard drive. Other vendors offer notebooks with one or two such features, but AST appears to be the first to combine all three and allow an upgrade from the base Intel Corp. 80386SL chip to an i486-class processor.

The basic display is mono-

chrome and can be upgraded to either a passive-matrix color screen or a thin-film transistor, active-matrix color screen.

One current AST notebook user was impressed by the new box. "That's a very hot product; we'd like to have it," said Ashvin D. Dave, director of database and technical services at Midas International Corp. in Chicago.

AST has also included both a floppy drive and two Personal Computer Memory Card International Association (PCMCIA) slots.

Dan Sheppard, director of marketing for portable systems, said the company thinks PCMCIA will "explode" in the

next year and will offer Token Ring and Ethernet adapter cards as well as modem cards and 3270 emulation cards. "We believe in open architecture, and [PCMCIA] gives every hardware developer a platform to design for this," he said.

AST has also designed an optional SmartPoint cableless trackball, the ability to support alkaline batteries and an algorithm that adapts the machine's power-management features to the user's habits.

"They have put a lot of the bells and whistles in one box," said Christopher Vasko, an analyst at BIS Strategic Decisions in Norwell, Mass.

AST is shipping monochrome and color versions. The monochrome versions include the PowerExec 3/25SL Model 63 with a 60M-byte hard drive for \$2,395 and the PowerExec 3/25SL Model 123/W, which has a 120M-byte hard drive bundled with Microsoft Corp.'s Windows 3.1 and a SmartPoint trackball, for \$2,795.

The PowerExec 3/25SL-Color Model 83 with an 80M-byte hard drive will sell for \$3,495, and the PowerExec 3/25SL-Color Model 163/W will retail for \$3,895.

AST expects to ship an active-matrix color screen in the fourth quarter. The company also released its \$449 PowerStation, a docking unit with two slots and three drive bays.

Unix Expo attendees seek remedies

CONTINUED FROM PAGE 1

lution to their particular problem," Donnelly said.

For users looking for significant announcements, all eyes will be on IBM's show-stealing splash built around its AIX Unix variant, a few new models of the RISC System/6000 and the broadening of its client/server strategy.

One IBM demo at the show, for example, will feature a Personal System/2 running both AIX and OS/2 over the Open Software Foundation (OSF)'s micro kernel technology.

Users familiar with IBM's plans said the RS/6000 is the next target platform for running

multiple operating system "personalities."

"The ability to run multiple operating systems gives IBM a platform that fits into a lot more customers' migration needs," said Chuck Hemann, manager of engineering computer operations at Harnischfeger Corp. in Milwaukee. "If you're migrating from OS/2 PCs to another platform and that new platform also runs OS/2, life is that much easier."

Users and analysts also noted IBM's rapid turnaround in just two years of paying attention to the Unix market. "As recently as a year ago, IBM's suite of ap-

plications for commercial accounts was rather narrow on AIX. That is changing," said Tom Willmott, an analyst at Aberdeen Group in Boston.

A prime example will be the introduction this week of CICS for AIX, which will allow users to off-load mainframe-based transaction processing work to RS/6000 servers [CW, Aug. 31].

Putting CICS on AIX will help "make an easy transition of our mainframe applications over to a distributed environment," said Bob Denison, open systems development unit manager at Wausau Insurance Cos. in Wausau, Wis., which has a client/server network of 30 RS/6000s.

Still, Denison is frustrated with the pace of the RS/6000's growth on the high end. His firm recently turned to Sequent Computer Systems, Inc. for a machine powerful enough to run a large database application. "We need something with more scalability," he said. "I hope we hear more [this] week about where IBM is going with the high end."

Wide focus

Overall, IBM's direction with the RS/6000 is to "span the entire range of computing and support multiple operating environments, from DOS through mainframes," said one customer who

asked to remain anonymous.

Integrating the mainframe into open systems environments is of particular interest to large corporate users. "Our chief information officer now calls the IBM machines the Big Blue servers," said Sam Malek, manager of technology support at New York-based Salomon, Inc. "The Big Blue server is now finding a place in the open systems environment."

"I think the interest in Unix is much stronger in the larger shops now," agreed Bob Curran,

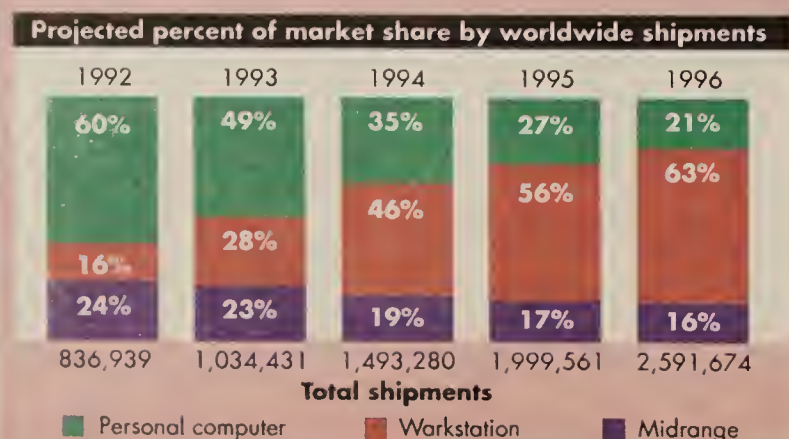
corporate director of information systems at EG&G, Inc. in Wellesley, Mass., a \$2.7 billion electronics and high-tech components company.

Curran is sending one of his managers to Unix Expo. "I thought the tutorial sessions looked excellent," he said.

Those tutorials will cover a range of topics, from Unix system administration basics to advanced networking, corporate transaction processing and integrating Microsoft Corp.'s Windows into Unix environments.

Commercial aspirations

Corporate use of Unix systems is projected to grow 27% annually during the next four years



Peaceful demonstrations

While IBM may dominate the news scene at Unix Expo this week, there will be quieter signs of life from other industry players as well.

The OSF will provide some glimpses of its technology in action by highlighting some 150 customer sites.

The OSF will also put some polite pressure on its sponsors with its "Challenge '93" program. This brainchild of the OSF end-user steering committee calls on vendors such as IBM, Digital Equipment Corp. and Hewlett-Packard Co. to set up and demonstrate heterogeneous environments using OSF technologies such as the Distributed Computing Environment.

Sun Microsystems, Inc. will demonstrate the multiprocessing features of Solaris 2.0 running on a Compaq Computer Corp. SystemPro. HP will show off its new Series 800 servers and several key software products.

DEC will highlight its commercial Unix products and stage a competitive demo running an Alpha workstation against Sun and HP boxes.

MARYFRAN JOHNSON

The Life of Brian

"WE'RE SO CONFIDENT IN OUR NETWORK STORAGE TECHNOLOGY, THAT IF YOU'LL SEND US YOUR NETWORK SYSTEMS ADMINISTRATOR FOR 4 HOURS, WE'LL PAY THAT PERSON'S SALARY FOR A FULL DAY," INVITES BRIAN SWAFFORD, FOUNDER AND PRESIDENT OF QSTAR TECHNOLOGIES, INC.

I WAS JUST A KID.

Even when I was young, I wanted to do world-changing kinds of things. I remember wanting to build the ultimate library, where anyone could access every book ever written at the touch of a button. My library would reside on a giant space station.

SO I MAJORED IN MATH, AND JOINED NASA.

Actually it was a double major: math and physics. Math for the massively complex file management algorithms, and physics because ... well, getting that much stuff into orbit seemed like a non-trivial physics problem. Is it any wonder I found myself at NASA's National Space Science Data Center heading up Networking and Mass Storage R&D?

I GOT TO BUILD THE NEATEST OPTICAL DISK NETWORKS THIS PLANET HAS EVER SEEN.

If you've heard of the Space Physics Analysis Network — or SPAN — I worked on it. And on many massive optical storage systems as well. I never did get to build my space station library of every book ever written, but it's amazing just how much information I got into orbit on revolving optical disks.

FIVE YEARS AGO I FOUNDED QSTAR.

You don't need a space station and NASA-scale resources to have several hundred GBytes of information online and at your disposal. What you *do* need is commodity mass storage devices and a group of software engineers to integrate all your media into a single, user-transparent storage network. And about five years to craft the only capabilities of their kind available anywhere, at any price.

IF YOU'RE READY TO SAVE UP TO 70% ON THE MASS STORAGE YOUR USERS WANT NEXT YEAR, WE'RE READY TO EXPLAIN HOW.

AT&T and Blue Cross have listened to us. So have EDS and Martin Marietta. We think you'll be excited about the only platform-independent, network-independent, hardware/software solution available. So we're making a special offer. If you'll lend us your UNIX systems administrator for four hours, we'll teach them how to satisfy user demand for more storage *and* save money. In fact...

IF YOU DON'T THINK THEIR TIME IS WELL SPENT, WE'LL PAY YOU THEIR SALARY FOR A DAY.

I believe we've collected the finest group of network storage professionals ever assembled. The solution they've developed is so effective, I'll put my money where my mouth is. If you'll give us four hours, I'll guarantee your satisfaction.

AND IF YOU'VE ALREADY MADE A BUYING DECISION...

... you can consider your time with us as *peace-of-mind insurance*. Given the big investment you might make on a large magnetic and optical storage network, four hours with us is dirt-cheap insurance. Isn't it?

CALL US TODAY. 1-800-568-2578.

Ask us to reserve four hours for you in our Visitor's Center. We'll tell your systems administrator (and you, if you care to join us), everything they need to know about networked storage. And afterwards, maybe we can talk about world-changing kinds of things.



We aim to make your world better.

Jefferson Plaza • 600 E. Jefferson St., Fifth Floor
Rockville, MD 20852 • Phone (301) 762-9800
FAX (301) 762-9829 • Internet: info@qstar.com



Shift all of your soft

Introducing Intel OverDrive™ Processors for your i486™ DX PC.

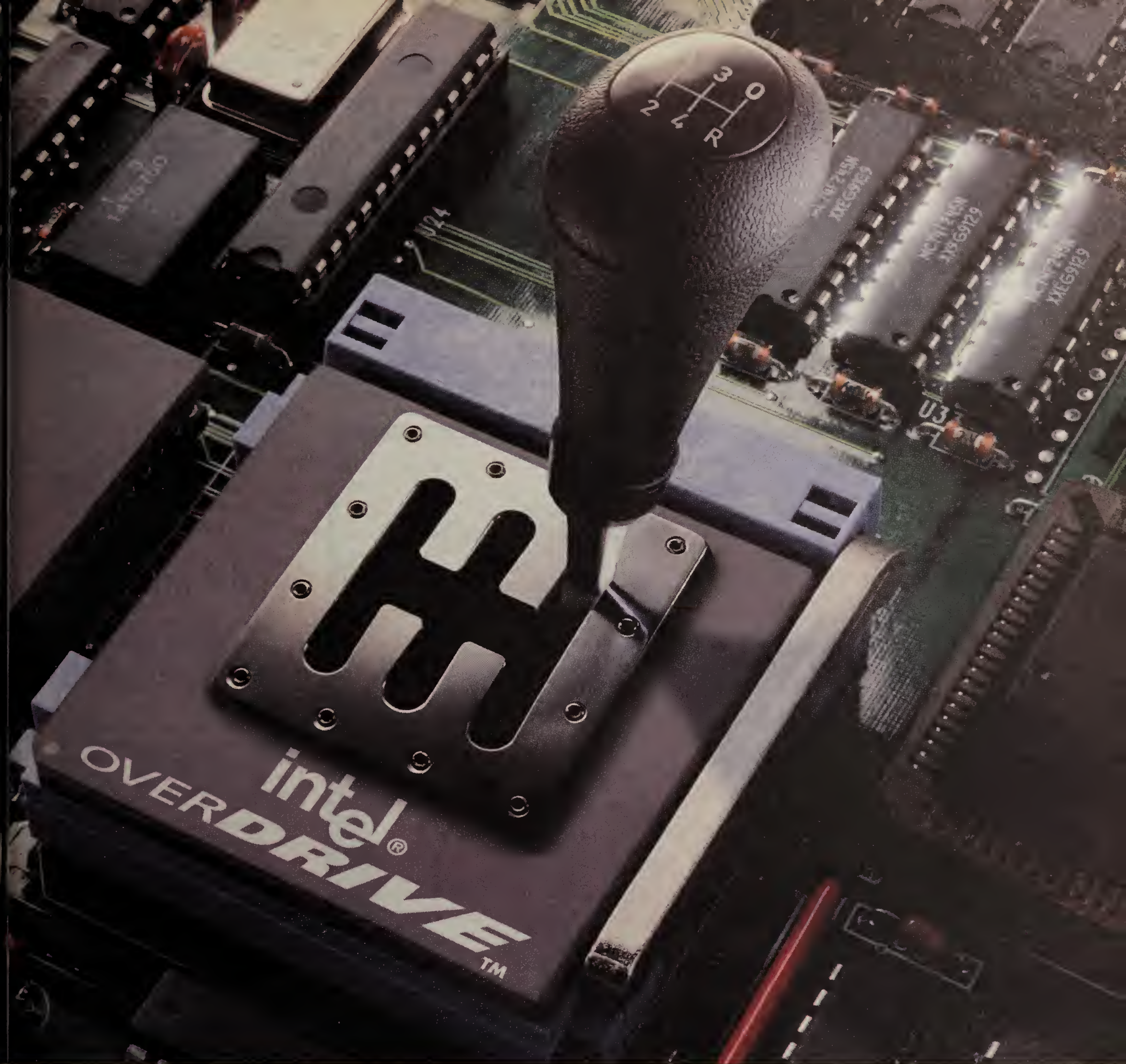
Would you like to visibly increase the speed of all your applications? Then it's time you shift your i486 DX or SX system into OverDrive.

Using Intel's ingenious "speed doubling" technology, an OverDrive Processor gives you plenty of added power—up to a 70% performance boost systemwide.

And that power will benefit every application you run on DOS, OS/2*, Windows*, or UNIX*

i486™ DX System Performance





ware into overdrive.

—from AutoCAD* to WordPerfect* and over 50,000 applications in between.

It's easy to install an OverDrive Processor. Just plug the single-chip upgrade into the vacant OverDrive socket† and

**WE MAKE
COMPUTERS
WORK
HARDER.**

Find out more. Ask for ext. 218
1-800-538-3373

you're ready to go. Faster. So to rev up your i486 system and keep up to speed on all the latest software developments, you need the future of PC upgradability: Intel OverDrive Processors.

Call 1-800-538-3373, ext. 218 for more information. Because when it comes to running software, there's only one gear. High.

intel®

Lotus unveils developer's kit for VIM

BY CHRISTOPHER LINDQUIST
CW STAFF

CAMBRIDGE, Mass. — In a bid to counter Microsoft Corp.'s momentum in the messaging application programming interface (API) arena, Lotus Development Corp. has unveiled a developer's kit for its own messaging interface.

The Vendor Independent Messaging (VIM) Developer's Toolkit allows software makers to build applications that conform to a single standard — VIM — for sending electronic messages.

A VIM-compliant application would

theoretically be able to send messages across a diverse range of networks and operating environments without having to work through the complexity of each environment. For example, a message could be written under DOS in a mail-enabled word processor and sent directly from the word processor to another mail-enabled application on an Apple Computer, Inc. Macintosh.

Microsoft's Messaging API (MAPI), which was originally positioned as extremely Windows-centric, has recently been expanded to include some support for both DOS and the Macintosh.

The VIM steering committee consists of several of the largest software and hardware vendors in the world, including Borland International, Inc., Novell, Inc., WordPerfect Corp. and IBM.

Subject to scrutiny

Microsoft has also placed its MAPI specification before the XAPI standards committee for review and adoption. The strength of the Windows environment's presence and Microsoft's intimate connection to the product will no doubt help Microsoft attract third-party developers.

"VIM has a little more momentum

right now, but Microsoft has thrown [down] the gauntlet by aligning themselves with users and XAPI," said Mike Anderson, program director for office information systems at Gartner Group, Inc. in Stamford, Conn. "It's neck and neck."

For the moment, vendors may have to hedge their bets and work with both standards if they are not to be left out in the cold, should one become a de facto standard. "It would be nice if we could have just one interface," said Ajit Kapoor, vice president at Meta Group, Inc. in Westport, Conn. "That is not the case."

Developers shared the same attitude. "One API, wouldn't that be wonderful?" said Anik Ganguly, vice president of product development at Southfield, Mich.-based Campbell Services, Inc., a maker of scheduling programs. "That would certainly be wonderful, but it looks like industry politics won't let that happen."

The VIM Developer's Toolkit supports CC:Mail on Windows and OS/2, with support for CC:Mail on DOS, Macintosh, Unix and Lotus' Notes expected in future releases.

FDDI interface for Sbus debuts

BY JOANIE M. WEXLER
CW STAFF

MILPITAS, Calif. — Users looking to bulletproof Sun Microsystems, Inc. SPARCstations and other Sbus-based computers against failures on Fiber Distributed Data Interface (FDDI) networks now have the option of linking those devices directly to both of FDDI's 100M bit/sec. redundant rings for \$2,995.

Last week, Network Peripherals, Inc. became the first vendor to offer the dual-attach capability for the Sbus platform, analysts said. Users are likely to double-link their network-critical computers, such as servers and concentrators, to FDDI to ensure their continued uptime. Multiple end-user stations then single-attach to the protected concentrator.

Top candidates

Small local-area networks of workstations running bandwidth-intensive modeling and scientific applications — such as the SPARCstation — often need optimum throughput, so they are also strong candidates for dual attachment.

Network Peripherals and other vendors already offer single-connection cards for the Sbus platform.

In the single-attach scenario, the total cost of an FDDI connection includes the price of the card (in Network Peripherals' case, \$2,495, and in Sun's case, \$2,995) plus the cost of a corresponding port on a concentrator.

Digital Equipment Corp. currently offers the lowest per-connection price for a concentrator at \$1,625, according to Karl Shimada, vice president of market research at Rising Star Research, Inc., a consultancy in Van Nuys, Calif.

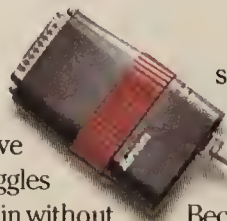
Notoriously hefty FDDI prices have been dropping by half each year for the last two years, and lower cost adapters for running 100M bit/sec. networking over copper, albeit with some distance limitations, are in the \$1,500 range from 3Com Corp., IBM and others.



©1992 Xircom, Inc. Pocket LAN Adapter is a trademark of Xircom, Inc.

Just how big a deal do you think it is
to connect a notebook to your network?

Yeah, we know what you're thinking. You're a networking professional. Not an industrial engineer. Which is exactly why you'll want to give our Pocket LAN Adapters™ a close look. (No goggles required.) They're so simple you can plug them in without



Xircom

so much as a screwdriver. And so versatile they work with virtually all notebooks, all network operating systems, and all topologies. So call 1-800-874-7875 ext. 61A for more info. Better yet, call your dealer. Because this doesn't have to be a big production.

After just one year together, we're bringing you a whole lot more.

In philosophy, yin and yang come together as complementary forces to produce a complete whole that can be greater than the sum of their parts.

That's exactly what's happened since the merger of AT&T and NCR last September. By joining forces, we're now offering you the most complete set of enterprise-wide information systems and services available worldwide.

Some achievements of our first year together:

For an international investment bank, AT&T and NCR combined resources to provide end-to-end management of a complex multi-vendor network, including on-site support.

For another banking customer, AT&T brought its video-teleconferencing technology to NCR's automated teller machines.



Now people get personal, face-to-face service without going inside the bank.

AT&T ISTEEL and NCR Europe announced a pan-European digital service to provide one-stop networking for multinational companies.



AT&T put its communications software into NCR's laptop computers so that people on the go can now send facsimiles and electronic mail over cellular networks.



Open systems based on AT&T Bell Laboratories' world-class research, AT&T's unsurpassed experience in communications, and NCR's leadership in computers can bring these kinds of benefits to you, too.



And we've only been working together for a year.



Apple announces a breakthrough between Windows

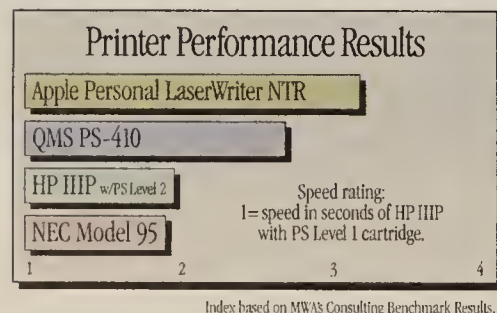
Apple has long been known for breakthroughs. Apple pioneered desktop publishing. Apple was first to bring the quality of Adobe™ PostScript™ to popularly priced laser printers.

Apple was the first to make high-resolution scanning as easy as one touch of a button. And Apple® LaserWriter® printers remain among the highest-rated printers for image quality and durability.

Now, Apple is extending all those breakthroughs to people who use PCs and Windows.

The fastest printer in its class for PCs.

With a RISC controller that assembles pages at incredibly high speeds, the Apple Personal LaserWriter NTR is



The RISC-based Personal LaserWriter NTR dramatically outperforms the HP LaserJet IIIP, the QMS PS-410 and NEC Model 95.

compatibility, a parallel port to connect to your Windows PCs and an AppleTalk® port to connect to your Macintosh® computers. And since both of these ports are simultaneously active, it can receive documents from both Macintosh and PC users without flipping any switches.

significantly faster than a similarly equipped Hewlett-Packard LaserJet IIIP. Yet it costs less.

The LaserWriter NTR comes standard with Adobe PostScript Level 2 and LaserJet II PCL com-

The PC-compatible Personal LaserWriter NTR.

So the LaserWriter NTR is not just faster. It's also more flexible.

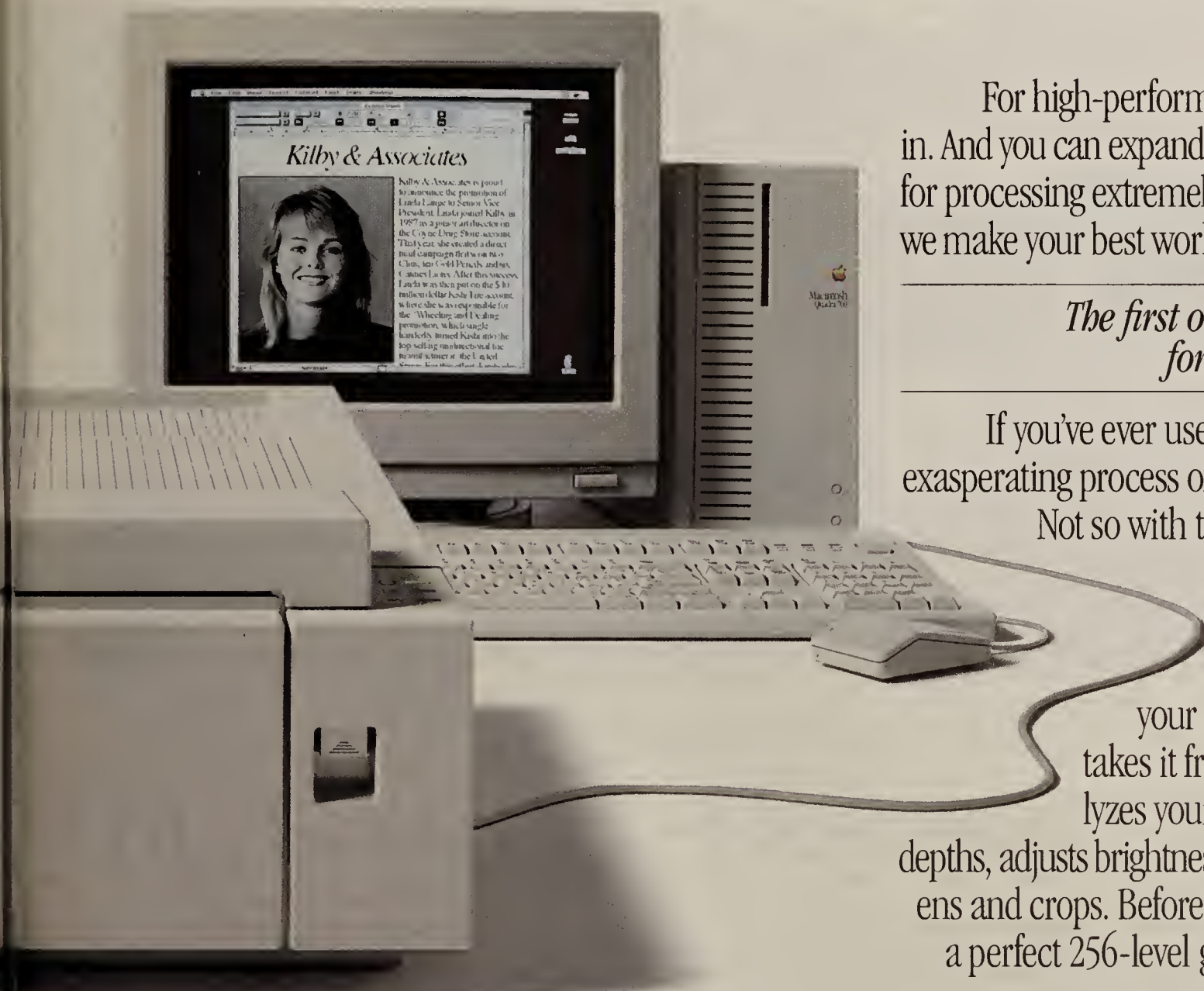
The first PhotoGrade printer for PCs.

Like the LaserWriter NTR, the Apple LaserWriter IIg works equally well with both Macintosh and PCs. But it adds an innovative Apple gray-scale technology called PhotoGrade™



On the left, conventional laser printing. On the right, Apple PhotoGrade printing. Which will do more for your image?

major breakthroughs and Macintosh.



For high-performance networks, Ethernet is built in. And you can expand the memory to 32 megabytes for processing extremely complex documents. At Apple, we make your best work look even better.

The first one-touch scanner for Windows.

If you've ever used a scanner, you know it's an exasperating process of fiddling, futzing and adjusting.

Not so with the Apple OneScanner™ for

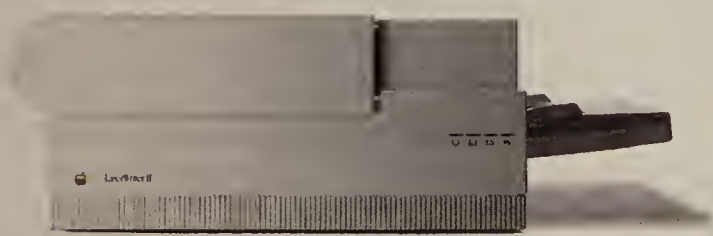
Windows. You simply pop your photograph or other artwork onto the scanner and click

your mouse once. The OneScanner takes it from there. It automatically analyzes your image, sets the dpi and bit depths, adjusts brightness and contrast, and even straightens and crops. Before you know it, you've got yourself a perfect 256-level gray-scale scan.

One click. It's really that easy.

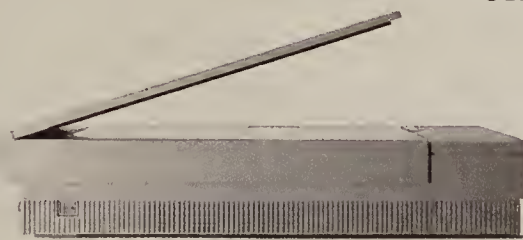
Your authorized Apple reseller will be glad to demonstrate just how much these breakthroughs can do for all

that delivers pages with image clarity comparable to 800 dpi.



The PC-compatible LaserWriter IIg.

Documents that incorporate photographs look nothing short of amazing. And with Apple's exclusive FinePrint™ technology, even text and line art have sharper edges and smoother curves than ever before.



The OneScanner for Windows.

your Windows PCs. For the location of a reseller in your neighborhood, call 800-538-9696, extension 145. And discover the power to make your work look better than ever. The power to be your best.®



ADVANCED TECHNOLOGY

TECH TALK

Holographic storage

■ Amoco Laser Co., an Austin, Texas-based firm, will provide a key laser device for a holographic storage system being developed under the sponsorship of Microelectronic and Computer Technology Corp. (MCC). MCC is developing the system as part of a 1991 award from the Advanced Technology Program of the U.S. Department of Commerce. In addition to Amoco's diode-pumped, solid-state laser, the MCC holographic storage project includes contributions from several other firms. A working prototype of the MCC system is expected by 1994. That device is targeted to have a 2G-byte memory and readout times of less than 100 microseconds.

Auto screening

■ Potential blood donors are more likely to reveal their risk factors for the HIV virus to a computer than to a human interviewer, according to a study by Boston's Beth Israel Hospital, published this month in the *Journal of the American Medical Association*. Researchers determined that the 294 donors who were asked to use the computerized system — in addition to standard questionnaires and personal interviews — felt the computer-based system was more private. "Since obtaining information about behavior is essential to preventing the spread of AIDS, the computer will have an important role in screening," one of the researchers said.

Data as sounds

■ Software for developing applications that present data as sounds was announced this month by Clarity Software, a Garrison, N.Y.-based firm. The Clarity Sonification Toolkit was demonstrated at the Virtual Reality '92 conference in San Jose, Calif. Sonification can display as many as five to 10 data streams without cluttering the visual field, said Clarity executives, noting that the human mind is good at recognizing auditory patterns.

Guten tag! Bonjour! Good day!

Carnegie Mellon to demo Janus speech recognition and translation system in January

BY MELINDA-CAROL BALLOU
CW STAFF

I imagine this: At your Boston office, you speak English into your workstation, and your Tokyo-based colleague hears the Japanese translation. She responds in Japanese, and you hear her answer in English.

As world economies become more integrated, the need for multilingual technologies is more acute than ever before.

Research into speech recognition and translation has been going on for

speech into digitized text, translating that text into the speech of the target language and outputting it via a speech synthesizer.

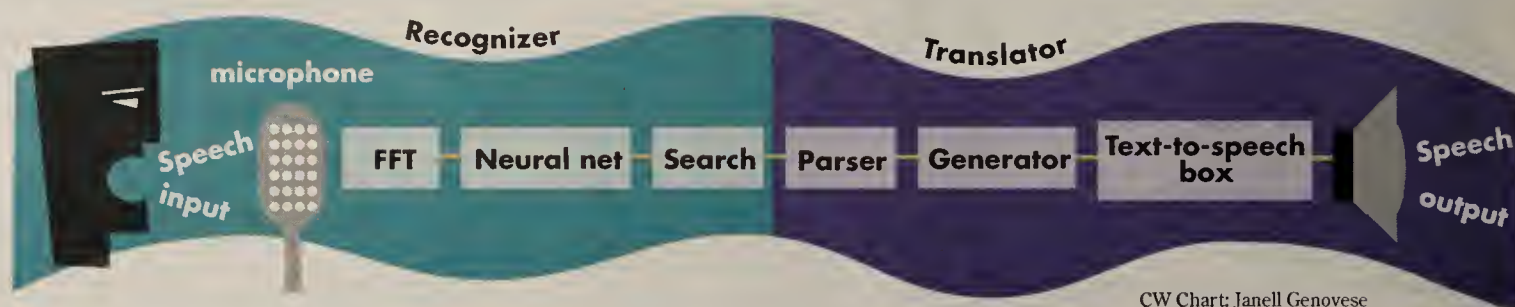
"Translating broad-based speech into accurate, digitized text is a very hard problem, and translating text into a target language is also very difficult. Combining them compounds two very difficult problems," said Bill Meisel, president of TMA Associates, a market research firm specializing in speech technologies based in Encino, Calif.

One problem is that computerized recognition of spoken words can often introduce errors.

The largest market for speech recognition and speech synthesis systems will be for systems capable of translating spontaneous speech. But the complexity of addressing those translation issues is far beyond the capabilities of current technologies.

In order to make them nearly interactive, "almost all speech recognition and translation systems must limit themselves now to a specific set of words and tasks," McNair said.

"It is a hugely difficult technical problem to handle an unconstrained conversation like the one you and I are now having," Meisel agreed.



CW Chart: Janell Genovese

more than 30 years. But the requirements for speech recognition have been so computationally intensive that even simple tasks, such as the recognition of single words, were laborious and time-consuming when computing power was less available.

The translation of text from one language to another has progressed more rapidly than speech recognition because the text translation is less consumptive of CPU power. The combination of both technologies is now beginning to yield results.

The birth of Janus

In January, members of Carnegie Mellon University's Center for Translation, Siemens Corp., the University of Karlsruhe in Karlsruhe, Germany, and Japan's Advanced Technology Research consortium are scheduled to conduct an intercontinental demonstration of Janus, a speech recognition and translation technology.

Janus will allow members of the group to speak with one another in English, Japanese and German but under more constrained conditions than the scenario described above.

Janus, which was designed as a conference registration system, has a vocabulary of only 400 words. The translations themselves will occur in almost real time, taking about one and a half times the actual speaking time in the best cases.

The current version of the system runs primarily on Hewlett-Packard Co.'s HP 9000 Series 720 Unix workstations, in conjunction with a massively parallel system from Maspar Computer Corp. in Sunnyvale, Calif., using Digital Equipment Corp.'s DECTalk as a speech output device.

Janus addresses several complex problems: receiving and translating

"There are challenges all along the way," said Arthur McNair, a research programmer at the Neural Network Speech group at Carnegie Mellon. "Someone might say 'Hello, how are you?' and our recognizer might come back with 'Hello, how is it?'"

To overcome these difficulties, Janus offers a language model built specifically for the task of conference registration. Hypotheses created by the recognizer are parsed and matched against that model. The text is then analyzed to find the most appropriate choice.

Neural exploration

Those involved with the Janus project have been exploring the use of neural networks to help discriminate among sound patterns.

"Our language model is written in such a way that it is expecting the sentences that we have and not very much more at the moment," McNair said.

"One of our current tasks is to try and extend our system to spontaneous speech. We want people to be able to express things differently, rather than being limited to the actual sentences that we have in the system. We're trying to write a more complicated grammar for the parser so that it will accept many more types of grammatical structures and sentences," he explained.

The researchers are also attempting to increase the speed of the recognition process and to support more people. They would also like to increase the vocabulary size beyond the 400 words and thus increase the range and scope of the content it addresses.

To allow for common speech, a system must have a vocabulary of at least 1,000 words; a more general discussion requires at least 10,000, according to McNair.

Janus mechanics

When a user speaks into Carnegie Mellon's Janus system, the workstation receives the input as wavelengths that are digitized by an analog-to-digital converter.

Then Janus uses Fast Fourier Transforms (FFT), an algorithm that was designed to take the waveform input to create a frame for each fragment of speech and convert this data into a spectrum. The FFTs also compact the data so that it is easier to feed through the system. These frames are then fed into Janus' speech recognizer. The recognizer arrives at a hypothesis of what was said, which is then sent to the translator. The translator parses the sentence to determine if it is a valid utterance according to the Janus language model.

The use of neural networks in this parsing process increases the accuracy of the Janus system as well as its efficiency because the system is able to learn parsing via examples, instead of requiring complicated grammatical structures for all possible linguistic alternatives.

If the sentence is valid, it is sent to the output language generator, which produces the translation, and the speech is output.

RIGHTSIZING WITHOUT CAPSIZING

- ☐ ATLANTA, GA
THUR., OCTOBER 23
- ☐ AUSTIN, TX
TUES., OCTOBER 20
- ☐ BALTIMORE, MD
THUR., OCTOBER 29
- ☐ BOSTON, MA
TUES., OCTOBER 27
- ☐ CHARLOTTE, NC
TUES., OCTOBER 27
- ☐ CHICAGO, IL
TUES., NOVEMBER 10
- ☐ CLEVELAND, OH
FRI., OCTOBER 30
- ☐ DALLAS, TX
FRI., OCTOBER 16
- ☐ DENVER, CO
THUR., OCTOBER 15
- ☐ DETROIT, MI
THUR., NOVEMBER 5
- ☐ FT. LAUDERDALE, FL
THUR., OCTOBER 29
- ☐ FT. LEE, NJ
THUR., OCTOBER 23
- ☐ HARRISBURG, PA
THUR., NOVEMBER 5
- ☐ HARTFORD, CT
TUES., OCTOBER 6
- ☐ HONOLULU, HI
TUES., NOVEMBER 10
- ☐ HOUSTON, TX
TUES., OCTOBER 13
- ☐ INDIANAPOLIS, IN
THUR., NOVEMBER 12
- ☐ JACKSONVILLE, FL
THURS., NOVEMBER 19
- ☐ KANSAS CITY, KS
TUES., OCTOBER 6
- ☐ LOS ANGELES, CA
TUES., OCTOBER 27
- ☐ MEMPHIS, TN
TUES., NOVEMBER 17
- ☐ MINNEAPOLIS, MN
THUR., OCTOBER 8
- ☐ NEW ORLEANS, LA
THUR., NOVEMBER 5
- ☐ PHILADELPHIA, PA
TUES., OCTOBER 20
- ☐ PITTSBURG, PA
TUES., OCTOBER 13
- ☐ ROCHESTER, NY
FRI., OCTOBER 9
- ☐ SEATTLE, WA
THUR., OCTOBER 29
- ☐ WASHINGTON, DC
TUES., OCTOBER 13

Sign me up for the Software AG free management seminar. I have checked the location and date of the seminar I will attend.

NAME

TITLE

COMPANY

ADDRESS

CITYSTATEZIP

TELEPHONE

I WILL BRING_____OTHER PEOPLE.

For complete information and quick registration call
1-800-843-9534, ext. 100

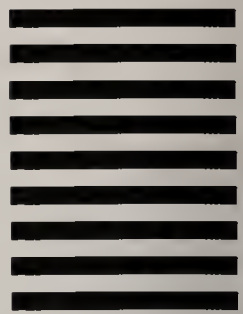


NO POSTAGE
NECESSARY
IF MAILED IN
THE UNITED
STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 2637 CLEARWATER, FL

POSTAGE WILL BE PAID BY ADDRESSEE

S SOFTWARE AG
Executive Center
Suite 236
25400 US 19 North
Clearwater, FL 34623-9891



**A Bottom-Up Approach
To Rightsizing Can Turn
Out To Be Just That.**



SOFTWARE AG INVITES YOU TO A FREE MANAGEMENT SEMINAR

RIGHTSIZING WITHOUT CAPSIZING

A bottom-up approach to rightsizing promises to rescue users from a "host" of problems. But below the surface, fierce undercurrents threaten disaster.

Uncontrolled decentralization can lock you into platforms and software solutions that force you to be reactive; to support systems lacking standards, integration, data integrity, recovery and security.

The alternative to this uncontrolled, revolutionary approach is an evolutionary approach. One that lets you be proactive. Fixing what's

wrong without losing what's right. Changing course without abandoning ship. Rightsizing without capsizing.

The bottom-line is a top-down approach to rightsizing. One that empowers IS to design and deliver enterprisewide client-server solutions in multiple platform environments. Without retraining. Without restaffing. Without recoding.

The key is true application portability and integration linked with powerful networking facilities, yielding a time-proven implementation strategy. We provide you with the

flexibility and control to handle whatever is on the horizon; from a changing business environment to emerging new technologies.

Learn to thrive, rather than survive in these changing times. Simply attend one of the FREE management seminars on Rightsizing Without Capsizing when it comes to a city near you. Your company can chart a course for rightsizing without turning everything else upside down.

To reserve your place, call
1-800-843-9534, ext.100

 **SOFTWARE AG**
SOLUTIONS WORLDWIDE

Think of the new Digital with



Consider this a safe bet in the world of terminals. The Wyse WY-285 is plug-and-play compatible with your DEC VT420 or VT320 environment. And ours costs 21% less.

So what do you have to sacrifice in this sounds-too-good-to-be-true scenario? Actually, nothing. In fact, the WY-285 has a few extra features. Like an

Now Wyse 285 as a smaller digits.



additional serial port, non-volatile function keys and an 85Hz refresh rate. Not to mention an EPROM access door for reprogramming ease. At this point, we're tempted to use a cliché like "more for less." Instead, we'll just ask that you consider the size of Digital's digits. And then call 1-800-GET WYSE.

WYSE
| | | |

EDITORIAL

Homespun



The landmark article "Who is us?" in the *Harvard Business Review* a couple years back defined the essence of the multinational company. It is a corporation that, while based in one specific country, is really a global citizen.

So although Honda is based in Japan, it manufactures its top-selling Accords in the U.S. and ships some abroad. The company uses American labor to build them, and it pays local American taxes. The Accord is assembled with many made-in-Japan parts, but the steel for those parts does not originate in that resources-starved nation. All things considered, the Accord is a sort of non-nation-specific product.

This is the way the world is going. And it is very important that our own policymakers fully understand this when it comes to formulating the competitive rules of the road.

With these dynamics in mind, it is hard to comprehend the flap that has followed the awarding of a \$740 million Department of Defense contract for PCs to Zenith Data Systems. Zenith Data is owned by France-based Groupe Bull, which continues to have Zenith Data operate almost entirely out of the U.S.

The contract award wasn't a clean one. In fact, the DOD originally gave it to two U.S.-based vendors, but the bid-evaluation process had to be reopened when several of the 22 bidders griped about the original award.

Naturally, some of the rejected bidders started banging on the "buy-American" war drums. How can government money go to a subsidiary of a French company?

Why not? For one thing, let's assume the procurement people at the DOD determined that Zenith Data could best fit their requirements. Which means, by association, that any other accepted bid would have somehow fallen short of the mark set by Zenith Data.

More importantly, as it relates to public policy, shouldn't the federal government favor those suppliers that have the highest content of U.S. labor in their products, if they are going to favor anyone at all? I bang away on a laptop proudly carrying the logo of an all-American company, but there isn't a nickel's worth of U.S. labor that went into producing my machine. Is this vendor, for example, more certified in any nationalistic sense to fill that DOD contract than Zenith Data, which does 100% of its manufacturing here in the U.S.?

There are those who would claim that the billions of dollars in annual purchases the government makes ought to totally ignore domestic employment factors and just concentrate on getting the best product the most cheaply. Tell that to the swelled ranks of the unemployed.

But neither policymakers nor the public should be misled by the many faces of jingoism — faces that often disguise other intentions.

Bill Laberis

Bill Laberis, Editor in chief



LETTERS TO THE EDITOR

Job security is worker's responsibility

I wish I could say that your front-page article concerning the unionization of information systems professionals [CW, Sept. 7] shocked me, but it did not.

Many U.S. workers feel that they have a God-given right to work for a corporation of their choice until they retire.

Corporations have the right to maintain an appropriately sized work force that possesses the skills most valuable

to the corporation.

Technology is, by nature, always changing, and it is a fact of life that IS professionals must keep abreast of the latest technology if they are to remain a valuable asset to a corporation.

When will workers in the U.S. realize that it is not corporations' responsibility to employ workers, but their choice?

Jill Blejwas
Underhill, Vt.

Disagrees with Scorecard's results

Your Buyer's Scorecard [CW, Aug. 31] on virus products was misleading.

You quoted a survey that claimed the three products reviewed held the "lion's share" of the market.

However, the industry's leading virus product, McAfee, which you only mentioned in passing, holds a 62% market share, according to a November 1991 independent survey conducted by Dataquest.

Our experience as a leading McAfee agent and supplier of local-area network-enabling interfaces for McAfee confirms this market share among our Fortune 1,000 clients, with few occurrences of the products you surveyed.

The fact that McAfee chooses a shareware approach to distribution should not exclude its products from any serious evaluation.

Randy Bradley
President
NetPro Computing, Inc.
Scottsdale, Ariz.

Speak now or forever hold your ...

"Users unite! Let's stand up for our basic rights" [CW, Aug. 24] led me to think about the users I have to deal with every day.

Some users are a joy to work with, but a good majority of them are not. I realize that IS-bashing is in fashion, but let's be a bit realistic.

When user comments and input are requested, it's "I'm really busy right now" or "Just create something and I'll let you know if it's what I want." If users refuse to take the time to help define the system they want, there should be no complaints about the final results.

There is no doubt that IS is responsible for helping new users get oriented. But there are too many users who are truly computer-phobic or just too unwilling to change.

Oops! Time for me to get out and help secure that IS empire. The sun never sets on our data center.

Michael Fanelli
Enka, N.C.

Big fan of Hewlett-Packard

This is regarding "Survey pegs computer downtime costs at \$4 billion" [CW, Aug. 10].

At Intermountain Gas Co. in Boise, Idaho, we have had Hewlett-Packard hardware since 1980. We have upgraded accordingly as the need for more space/horsepower has become apparent.

Because user downtime is a key issue, I report to management all items that affect our users: power failures, hardware failures, software failures, etc. Our user downtime since 1984 averages out to be only 21.56 hours per year.

That equates to an average of 1.79 hours per month — with an average of seven incidents per year — that our users were affected by computer system downtime.

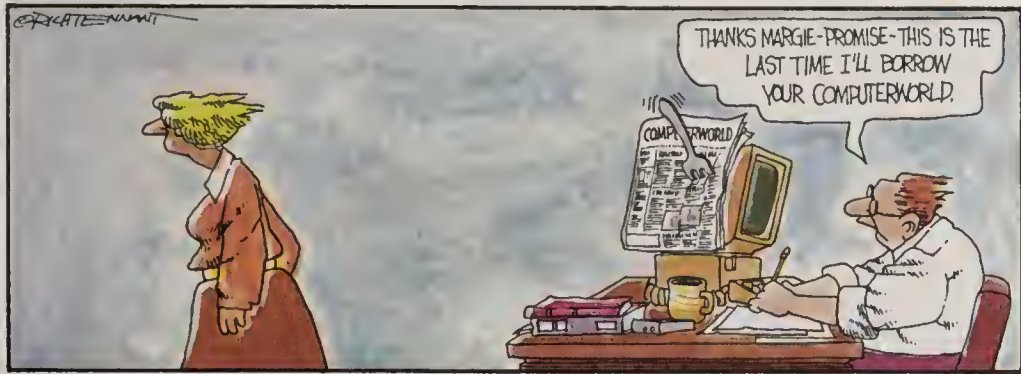
Of these, only a small percentage (an average of a half-hour per month) relates to the HP hardware.

I think that these figures say a great deal about HP and the reliability of its equipment.

I don't know what vendor's equipment is being used by those companies involved in your survey, but I can't say enough about the quality and reliability of HP hardware.

Dick Edwards
Boise, Idaho

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.



YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of \$29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year

* U.S. Only. Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD



YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of \$29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name

Title Company

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year

* U.S. Only. Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.

Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
 - 20. Finance/Insurance/Real Estate
 - 30. Medicine/Law/Education
 - 40. Wholesale/Retail/Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Raffining/Agric.
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. System Integrators, VARE, Computer Service Bureaus, Software Planning & Consulting Services
 - 90. Computer/Peripheral Dealer/Distr./Retailer
 - 95. Other _____
- (Please specify)

2. TITLE/FUNCTION (Circle one)
- IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
 - 21. Dir./Mgr. MIS Services, Information Center
 - 22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
 - 23. Dir./Mgr. Sys. Development, Sys. Architecture
 - 31. Programming Management, Software Developers
 - 41. Engineering, Scientific, R&D, Tech. Mgt.
 - 60. Sys. Integrators/VARE/Consulting Mgt.
- CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. VP
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
 - 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT
- 80. Educator, Journalist, Librarians, Students
 - 90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
- Please indicate your involvement in IS/MIS/DP.
- A. Manage/Supervise IS/MIS/DP Staff
 - B. Recommend/Specify IS Equipment
 - C. Purchase IS Equipment
 - D. End-user of IS Equipment
 - E. No involvement

E4238-5

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
 - 20. Finance/Insurance/Real Estate
 - 30. Medicine/Law/Education
 - 40. Wholesale/Retail/Trade
 - 50. Business Service (except DP)
 - 60. Government - State/Federal/Local
 - 65. Communications Systems/Public Utilities/Transportation
 - 70. Mining/Construction/Petroleum/Raffining/Agric.
 - 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
 - 85. System Integrators, VARE, Computer Service Bureaus, Software Planning & Consulting Services
 - 90. Computer/Peripheral Dealer/Distr./Retailer
 - 95. Other _____
- (Please specify)

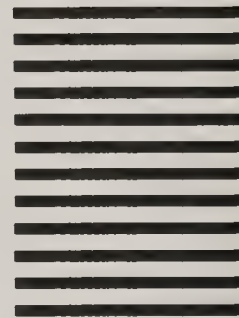
2. TITLE/FUNCTION (Circle one)
- IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
 - 21. Dir./Mgr. MIS Services, Information Center
 - 22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
 - 23. Dir./Mgr. Sys. Development, Sys. Architecture
 - 31. Programming Management, Software Developers
 - 41. Engineering, Scientific, R&D, Tech. Mgt.
 - 60. Sys. Integrators/VARE/Consulting Mgt.
- CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
 - 12. Vice President, Asst. VP
 - 13. Treasurer, Controller, Financial Officer
- DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
 - 70. Medical, Legal, Accounting Mgt.
- OTHER PROFESSIONAL MANAGEMENT
- 80. Educator, Journalists, Librarians, Students
 - 90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
- Please indicate your involvement in IS/MIS/DP.
- A. Manage/Supervise IS/MIS/DP Staff
 - B. Recommend/Specify IS Equipment
 - C. Purchase IS Equipment
 - D. End-user of IS Equipment
 - E. No involvement

E4238-5



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



COMPUTERWORLD

Editor in Chief
Bill Laberis

Executive Editor
Paul Gillin

News Editor
Alan Alper

Technical Sections Editor
James Connolly

Assistant News Editor
Patricia Keefe

Senior Editors
Elisabeth Horvitt, Networking
Rosemary Hamilton, Personal Computing
Nell Margolis, Management
Maryfran Johnson, Workstations
Joanie M. Wexler, Networking
Johanna Ambrosio, Systems & Software
Garry N. Ray, Application Development
Ellis Booker, Advanced Technology

Senior Writers
Michael Fitzgerald
Melinda-Carol Ballou

Staff Writers
Carol Hildebrand
Kim S. Nash

New Products Writer
Lisa Davidson

Features Editor
Joanne Kelleher

Senior Editors
Joseph Maglitta
Lory Zottola Dix
Mary Grover Brandel
Joyce Chutchian

Assistant Editors
Jodie Naze
Kelly E. Dwyer

Assistant Researcher
Stefanie McCann

Columnist
Jesse Berst

Research Manager
Michael L. Sullivan-Trainor

Research Coordinator
Kevin Burden

Product Research Coordinator
Derek Slater

Chief Copy Editor
Catherine Gagnon

Assistant Chief Copy Editor
Alice Lesch Kelly

Features Copy Editors
Kimberlee A. Smith
Steven J. Condon
Copy Editors
Anne McCrory
Stephen P. Klett Jr.
Christina Maguire
Jill Zolot

Design Director
Nancy Kowal

Graphics Designer
Tom Monahan

Design Assistant
Janell Genovese

Graphics Specialists
Michael Siggins
Stephanie Faucher

Cartoonist
Rich Tennant

Office Manager
Linda Gorgone

Editorial Assistants
Lorraine Witzell
Connie Brown
Aleksandra Skulte

Rights and Permissions Manager
Sharon Bryant

Back Issues
Margaret McIndoe

News Bureaus
Mid-Atlantic
(201) 967-1350

Thomas Hoffman, Correspondent

Washington, D.C.
Mitch Betts, National Correspondent
(202) 347-6718

Gary H. Anthes, Senior Correspondent
(202) 347-0134

West Coast
(415) 347-0555

Jean Bozman, Senior West Coast Editor
James Daly, Senior Correspondent
Mark Halper, Senior Correspondent
Christopher Lindquist, Correspondent
Brenda Cruden, Editorial Assistant
(801) 532-4277

Michele Dostert, Correspondent

Midwest
(708) 827-4433
Ellis Booker, Bureau Chief

Main Editorial Office
Box 9171, 375 Cochituate Road
Framingham, MA 01701-9171
(508) 879-0700

Fax: (508) 875-8931

MC Mail: COMPUTERWORLD

Subscriptions: (800) 669-1002

From 'whose?' to 'how much?'

W. D. REILLY



In what we now think of as the good old days, I was a man devoted to labels. I figured we could all have class, as long as we were willing to pay for it. There were a lot of us who felt that way then, although it's almost hard to imagine because the pendulum has swung so far in the other direction. Too far, I'm afraid.

Yes, our deference to labels was occasionally foolish. I dumped a brand new Apple computer in favor of the newest rage, the IBM PC. It had 64K bytes of memory, a single low-density disk drive, a color monitor with pixels the size of peach pits and a price approaching infinity. It wasn't HAL from 2001, but it had one thing the Apple didn't have: an IBM label.

Now, price is the thing and the price of computers is falling through the floor.

Mystery parts

The other day I saw a 486 machine complete with Super VGA, a 120M-byte fixed disk, a tape backup unit and two floppies for less than 2,000 bucks. For the life of me, I can't figure out how they do it. My guess is that they

spend a lot of time at computer swap meets, digging up cheap parts of dubious ancestry.

Even Compaq and the venerable IBM are dropping their prices to compete with the clone companies nipping at their heels. At some point, they will reach a price below which they cannot go, and I suspect it still won't be far enough. With costly R&D divisions to maintain, they will never be able to compete dollar for dollar with smaller and more maneuverable companies.

Where does that leave them?

I read an article the other day about a man who said he would like to own Compaq equipment because of its high quality, but he would not pay a penny more for the name. What?

Does that mean he wants a BMW, but will only pay Yugo prices? When you want quality, you have to pay for it. It's one of life's little shortcomings.

The small clone vendors have been able to compete strongly in a market obsessed with price and one that views quality only within the narrow bounds of a single desktop. But, in the rapidly growing network market, it's the little things that get you. Networks, particularly

large global systems, are complex enough. What you don't need is a workstation that fails because of improper design and testing.

I am probably one of the last people in the world who believes there is something wrong with a 486 PC that sells for \$1,000. But my job depends on keeping the computers in operation, and I'd



Stephanie Faucher

rather pay a small premium for quality equipment and after-sale support.

Don't get me wrong: I do agree that prices for some of the top name computers are high. I also think the big companies need to tighten their collective belts a notch or two.

But I like the idea that I can call these vendors if I have an unusual problem or need engineering support. Try doing that with most clone vendors and see what you get.

Big sizzle, small support

I'm acquainted with two lesser known clone makers. Both advertise in major publications. Both have nifty little 800 numbers. And both have staffs of less than five people.

I'm not suggesting that we have to buy expensive computers from companies without regard to cost. We can do what we've always done. We can shop around. We can pressure large companies to become more responsible and, if they don't come around, force them out of business by taking our dollars somewhere else.

What we cannot do is keep lowering our sights, accepting less and borrowing on our technological future. I figure if you want to dance, you should be willing to pay the band.

Reilly is the microcomputer support manager for the City of Hope Medical Center in Duarte, Calif.

Why Johnny can't get A's in C programming

EDWARD G. NILGES

In recent months, the loss of American programming jobs has generated much attention and concern.

The redoubtable Edward Yourdon has published a book on the decline of the American programmer, and in a recent issue of *Computerworld* [CW, Aug. 3], John S. Morrison wrote about the cost savings to be had by hiring programmers from the Commonwealth of Independent States (CIS), the somewhat shadowy entity that replaced the Soviet Union.

Recently, I taught the C language to a number of classes of IBM assembler programmers and had an experience that proved some of Yourdon's and Morrison's points.

The emigres have it

In the C classes, there were two distinct groups. One was made up of "ordinary Americans," people from a variety of ethnic groups, most of whom had been born in the U.S. and educated in local schools. The second group

consisted of recent emigres from the Soviet Union.

Although the American students were both capable and motivated, I found that the ex-Soviet students were significantly faster at learning C. The Soviet students enjoyed the course and demanded more advanced in-

IT WAS CLEAR to me that . . . the Soviet students represented the "better buy" and that Americans need to damp down their salary expectations and sharply increase their technical skills, if they expect to remain in the programming racket.

struction, whereas a number of the American students complained about the "complexity" of C. The ex-Soviets also seemed far more willing to check code carefully for errors.

It was clear to me that, for the

company in question, the Soviet students represented the "better buy" and that Americans need to damp down their salary expectations and sharply increase their technical skills if they expect to remain in the programming racket.

I took a pay cut to come to my current job and recently started learning C++, Visual Basic and Windows. I do this because programming is one of the few things I do that makes any money at all and because I think the idea of closing American borders to foreign skills and talent is both impossible and profoundly unfair. Why should I make 10 times what some hungry Russian or Mexican makes for coding C — unless, of course, I do it 10 times faster or 10 times better?

It is ironic, however, that after years of calling for American programmers to think like managers — to be less technically oriented and more attuned to the needs of business — U.S. companies now wish to export programming jobs to a population that, despite its high intelligence

and education, has very little experience with business.

Even more ironic is the fact that the theoretical skills of CIS programmers are so highly valued when U.S. programmers have been taught that theory-based approaches don't meet the needs of business.

In spite of their grumblings about "complexity," which is merely protective coloration, U.S. programmers want to learn and improve. The problem is that they've been impeded for years by management's attachment to out-of-date technology.

Layoffs often come to the older programmer, who has been complaining for years about preservation of museum-piece equipment and who long ago ported Unix to his home 386. Adding insult to injury, this "ancient programmer" is told at his exit interview that the reason for his layoff is lack of familiarity with workstation technology.

U.S. programmers do have work to do and lessons to learn. One of those lessons may be to pay less attention the next time management says it wants us to be "less technical."

Nilges is a programmer and Information Center consultant at Princeton University.

THE PROGRAMMER'S DILEMMA

AN INEXPENSIVE PC THAT FROM THE COMPANY THAT

What happens when the best computer engineers in the world design a low-priced desktop PC? You get the new COMPAQ ProLinea Line of PCs, perhaps the best value PCs in the world. What happens when a clone maker designs a low-priced PC? You get what you pay for.

When Compaq engineers set out to build an affordable, full performance desktop PC with

all the essential features, there were many options to choose from.

We could have bought

an existing low-end computer company.

We could have farmed out all the manufacturing.

We could have bought parts from the cheapest vendor in town.

But then all we would have ended up with is another inferior, low-priced



†This service is provided by contracted Service Providers and may not be available in certain geographic locations. Contact the Compaq Customer Support Center for further details. *Suggested retail price; reseller price will vary, monitor not included; price indicated is for COMPAQ ProLinea 3/25zs Model 40, not pictured here. © 1992 Compaq Computer Corporation.

IT'S AS GOOD AS A COMPAQ. WHAT OUGHT TO KNOW.

clone. And what we were determined to build was a low-priced COMPAQ computer.

Which is what you told us you wanted.

So through some high levels of chip integration and some equally high levels of engineering, design

Intel 386SX/25 ◀ small footprint ◀ 2 MB RAM ◀ 2 ISA slots ◀ 2 drive bays ◀ 40- or 84-MB hard drive

Intel 386SX/25, 486SX/25, 486/33, 486DX2/50 ◀ 2 or 4 MB RAM standard ◀ 3 ISA slots ◀ 3 drive bays ◀ 84- to 240-MB hard drive options

All COMPAQ ProLinea models include high-resolution 1024 x 768 video and pre-installed Microsoft MS-DOS 5.0 as published by Compaq

and just plain common sense, we've managed to cut costs in both system design and manufacturing.

While still managing to deliver 100 percent of

the virtues you've come to expect from Compaq.

You can choose from five different models, ranging from 386SX/25 to full 486DX2/50 processing power.

So whether you're most concerned with expansion, storage, processing speed or a small footprint, you're bound to find a model perfectly suited to all of your needs.

And each comes with a high-resolution 1024 x 768 video system.

Most importantly, the new COMPAQ ProLinea PCs are backed not only by the assurance of the COMPAQ name, but by CompaqCare, our new

service and support program. Which includes a free, one-year, on-site limited warranty, and a host of other services.

And to go along with this new line of PCs, there's a whole new line of places you can find them. Give us a call for more details.

In the U.S., call us at 1-800-345-1518, ext. 215, and in Canada, just call 1-800-263-5868, ext. 215.

We think you'll be pleasantly surprised at exactly how much the COMPAQ ProLinea PCs have to offer.

And equally surprised by how little we're able to offer them for.



With the COMPAQ ProLinea Line of PCs, you can choose from 386SX/25 to 486DX2/50 processing power.



All of our models are backed by CompaqCare, our comprehensive new service and support program. For details, just call 1-800-345-1518.



The COMPAQ ProLinea PCs start at just \$899.* Its introduction shook the industry, with PC WEEK affirming that we had "slashed prices without compromising quality."



When you spend ten years designing spreadsheets, you get pretty good at filling in the rows and columns.



While this is old news to the nearly 18 million people who use 1-2-3®, it bears repeating: according to a recent ComputerWorld study for spreadsheets, Lotus® is still the company people prefer to do business with. And still the company that offers the best service and support—across all major platforms.

1-2-3 is the *only* spreadsheet that runs on all major platforms: Windows™, DOS, Macintosh®, OS/2®, UNIX® and palmtops. Our DOS version of 1-2-3 is still the world leader and choice among 74% of DOS users.* For those of you moving from DOS to Windows, 1-2-3 is undeniably your best bet. And 1-2-3 for Macintosh

continues to receive high marks from users for being the easiest spreadsheet to use.

Now, we don't expect you to believe all

ComputerWorld Spreadsheet Brand Preference Study First Place Winners 1992			
POSITION	DOS	WINDOWS	MACINTOSH
FIRST PLACE Prefer To Do Business With	Lotus	Lotus	Lotus
FIRST PLACE Best Service/Support	Lotus	Lotus	Lotus

this just because you read it in an ad. Instead, we invite you to find out about Lotus and 1-2-3 for yourself. Just call **1-800-872-3387, ext. 7052**** for a free demo disk of 1-2-3 on the platform of your choice.***

Lotus. Still on the top of the charts.

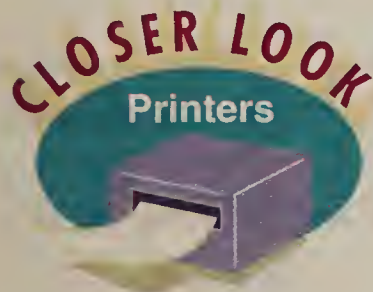
Lotus 1-2-3

*Based on Software Publishers Association share data, May 1992, for North America. **In Canada, call 1-800-GO-LOTUS. ***While supplies last. Demo disk not available for palmtop version of 1-2-3. ©1992 Lotus Development Corporation. All rights reserved. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Incorporated. OS/2 is a registered trademark of International Business Machines Corporation. UNIX is a trademark of UNIX Systems Laboratories, Inc.

DESKTOP COMPUTING

PCs AND SOFTWARE • WORKSTATIONS

Compaq, HP draw lines for their printer showdown

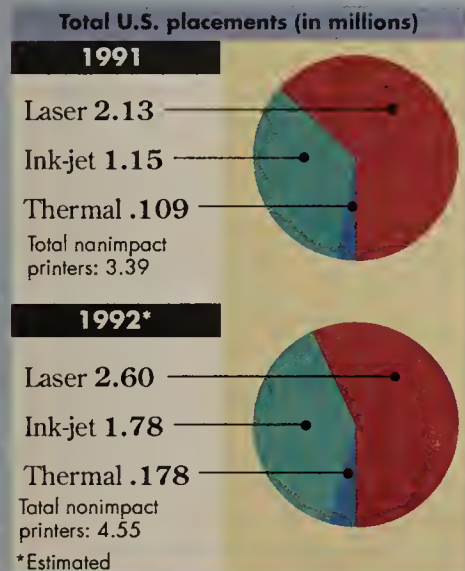


BY CAROL HILDEBRAND
CW STAFF

The new boy in town looks good, there's no doubt about that. But although Compaq Computer Corp.'s printers are gaining praise both for price point and feature set, Hewlett-Packard Co. holds the mind-set of a vast majority of customers.

Laser's edge

Laser printers will account for more than half of the nonimpact printers purchased this year



Source: BIS Strategic Decisions

Compaq announced two network printers that are plainly targeted at the heavyweight in the network printing category, HP's IIISI. According to analysts at BIS Strategic Decisions in Norwell, Mass., the Compaq printer has scored a bull's-eye. "Its kinds of features are state-of-the-art. They've definitely done a good job at looking at what is weak in the IIISI," analyst Rob Auster said.

However, Compaq has a long way to go if it is to break into a corporate mind-set that is overwhelmingly fixed on HP printers.

"There's an awful lot of people brainwashed into thinking that HP is the place to buy printers," said C. J. Meiser, another analyst at BIS Strategic Decisions. Meiser cited a BIS Strategic Decisions survey that placed HP as the No. 2 vendor of choice for network printers — before the company even had a network product out.

Meiser said he sees the printers as almost even when it comes to features, but Compaq has the advantage on price. With the PageMarq 15 listing at \$3,199 and the PageMarq 20 at \$5,499 — and street prices significantly lower — analysts predicted that HP would answer with a price reduction on the IIISI, as well as an upgraded model before

year's end. HP declined to comment.

Analysts said Compaq made a canny move in targeting one of its native strengths: expertise in networking. The network printing market is seen as one of the growth areas in the printing arena during the next four years. According to numbers from International Data Corp. (IDC), a market research firm in Framingham, Mass., 60% of personal computer users will be on a local-area network by year's end, with an estimated 69% on the LAN bandwagon by the end of 1996.

Aim for the top

Compaq will undoubtedly start by selling to its strengths: the big corporate sites that use a majority of Compaq servers and PCs. Indeed, Eckhard Pfeiffer, president and chief executive officer of Compaq, said that of the 10 printer beta-test sites, nine have decided to purchase a Compaq printer.

Another strength is Compaq's dealer channel. Slanted toward servers and PCs, many of the dealers have integration expertise, which will help in placing the printers in a networked environment. Conversely, Auster said HP had to struggle a little at first, moving the IIISI through a dealer channel that comes from the printer side.

The company also did its homework on the parameters of the printers. The PageMarq 15 and the PageMarq 20 print at 15

Challenge issued

Compaq is the first serious market share threat to entrenched HP, analysts say

	PPM	DPI	Price	PostScript	Duplex	Network interface
HP IIISI	17	300	\$5,495	Optional	Yes	Token Ring, Ethernet, Unix
Compaq PageMarq 20	20	300 PCL 800 x 400 PostScript	\$5,499	Built-in automatic switching between PCL, PS	No	Token Ring, Ethernet, AppleTalk

and 20 page/min., respectively. IDC research also found that of printers already installed on a LAN, 65% to 70% of 12 to 19 page/min. units shipped are destined for networks. IDC estimated that a 12 to 19 page/min. printer serves between five and 20 people comfortably.

Other places in which analysts said HP will be playing catch-up came in paper handling and font switching. PageMarq 15 and PageMarq 20 paper trays hold 1,000 and 1,500 sheets, respectively, with output trays holding 500 sheets. Compaq also uses a new technology, developed with Adobe Systems, Inc., that allows a printer to automatically sense which page description language is being sent to it and automatically switch be-

tween Adobe's PostScript Level 2 and HP's Page Control Language (PCL). On the IIISI, PostScript printing capabilities are an add-on that costs extra.

However, one of the things that the IIISI can do that Compaq's print engine cannot is duplex printing, or printing on both sides of a page.

One analyst said the issue could become important, particularly as environmental awareness rises. Joel Wechsell, an analyst at Gartner Group, Inc. in Stamford, Conn., said that in a networked environment, good sorting capabilities become important. "When a printer has a 20 [page/min.] output, you don't want to discover that your stuff is at the bottom of the pile," he said.

Network printer woes ease

BY KELLEY DAMORE
SPECIAL TO CW

While many information systems managers find LANs an attractive option, they have experienced many headaches with network printing. Printer vendors, however, have started to address the problems by producing network-ready printers, which have changed the landscape of printing by letting the printer be its own node on the network.

"Printing on the network has been a thorn in the side of IS managers. All the dissatisfaction in the past has been that the printer was too far away or was too slow. Printers hooked up to file servers offered limited capabilities because print jobs were spooled through the network," said Christine Rivera, a consultant at MicroDynamics Plus, Inc. The New York firm specializes in training managers in laser printing.

Don Davis, a manager of microcomputer support services at Boston University, noted, "The biggest advantage to network printing is that I can now print directly. I don't have to go into a queue in the file server. This has increased our productivity and performance."

Network printing doesn't come cheap, costing up to \$7,000 when networking options are considered, but some managers said the productivity gains make the cost worthwhile.

At the College of Business at Oregon State University, Greg Scott, computer service manager, replaced 11 HP LaserJet Series II printers with five LaserJet IIISI networked devices. "Even though users were printing to half as many printers, the LaserJet IIISI increased printing throughput dramatically," Scott said.

One improvement users said they want is to have the network operating system and printer keep them posted on the status of print jobs, rather than forcing them to search for the status themselves.

Damore is a San Francisco-based writer.

Quattro Pro for Windows last but hoping to be best

ANALYSIS

BY CHRISTOPHER LINDQUIST
CW STAFF

Better late than never does not mean much to the man staring into a smoking cellar hole just as the fire trucks arrive. Borland International, Inc. is hoping it will still find a blaze to fight when it finally ships Quattro Pro for Windows after months of delays.

The much-ballyhooed product has been beset by delays that have caused Borland to be the

last of the big spreadsheet players to enter the Microsoft Corp. Windows market. However, early users of the product said it is impressive enough, particularly in ease of use, to give competitors Lotus Development Corp. and Microsoft something to think about.

"In this first release, we really targeted ease of use and functionality," said Song Huang, product manager at Borland.

Huang noted that the product delays were caused by several factors, not the least of which

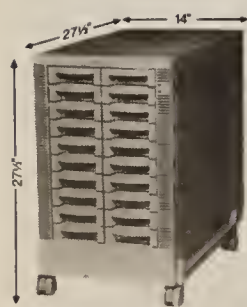
was Microsoft's release of Excel 4.0. Indeed, one of Quattro Pro for Windows' core features, the Database Desktop, which allows spreadsheet users to easily access outside data, was not intended to be fully incorporated in the first version.

However, Huang said, it was decided that "we're last in the market, so we'd better be the best."

Whether that is the case remains to be seen, but beta-test user Peter Blair, a product manager at DHL Worldwide Express, said the product is impressive. In particular, he called attention to the Database Desktop. "It's a good way to look at database information while putting together a spreadsheet."

Continued on page 44

Data General trumpets the open storage system news to IBM, SUN, HP, UNISYS and ICL users!



24 BILLION BYTES
IN 2.7 SQ. FT!

CLARiiON from Data General—the faster, smaller, UNIX® open storage systems that connect to IBM, SUN, HP, UNISYS and ICL for a price that's music to your ears!

Computer companies everywhere have been making a lot of noise lately about UNIX® open storage systems. The problem is that's all they've been making—noise! At Data General, we've gone quietly about our business and have actually created remarkable open storage systems called CLARiiON. And CLARiiON is one call everyone should heed because CLARiiON connects to the UNIX systems-based IBM RS/6000, SUN SPARCserver 600 series, HP 9000-800 series, UNISYS U6000 series and ICL DRS 6000. Its RAID technology vastly increases the storage capacity and high availability of these systems. And CLARiiON does it all for a price that's so low it will fit right in with the rhythm of your budget. So if you want uninterrupted data access, data loss protection, low-cost data redundancy and increased disk performance, all of which you can maintain yourself, think CLARiiON and call 1-800-DATA GEN.

CLARiiON™

OPEN
STORAGE
SYSTEMS



Data General
Where the World
is going!



User survey says Dell PCs best the competition

BY JAMES DALY
CW STAFF

NEEDHAM, Mass. — Mirror, mirror on the wall, who's got the most functional, least expensive, reliable and upgradable personal computer of them all? Answer: Dell Computer Corp., at least according to a recent study of four major vendors by an independent research house.

The Austin, Texas-based Dell outgunned PCs from Apple Computer, Inc., Compaq Computer Corp. and IBM in every category of Reliability Ratings' survey of the 500 largest PC sites in the country. It was only the second time a vendor has scored best in every category.

The findings, published in a \$124, 40-page document, collected a broad range of data on end-user experience with a total of 10,770 computers. Topics included reliability, service, technical support, functionality, upgradability, price, monitor and overall satisfaction.

The PCs had a total of 25 million run hours of history and were set up in more than 50 configurations, publisher Greg Strakosch said. Government and educa-

tional institutions were excluded, and the research firm surveyed only those PCs that were installed in the past year.

Mail-order vendor Dell got its highest customer satisfaction scores in reliability and price. Dell's PCs scored more than two points higher on a 10-point scale than any other vendor's PC in the aggregate for price. For the others, price was frequently listed as a major weakness.

Perhaps most important, nearly 81% of the users owning a specific Dell PC model said they would buy it a second time. The highest percentage of Dell users who said they would not buy the same model again said they would buy another

Dell PC, but a newer model.

Compaq had the second-highest score in four categories, barely missing a tie with Dell in reliability and creeping close in functionality and overall performance.

In a strong indication of customer satisfaction, nearly 92% of Apple users said they would buy the same Macintosh again, more than any other vendor. Apple users described ease of use as the major strength of Apple's PCs.

IBM finished poorly in the survey, coming in last in seven of eight categories. This poor finish, however, might ironically be caused by IBM's stellar reputation. "People seem to hold IBM up to a higher

standard," research director Kevin Beam said. "For many people, buying IBM was a default decision, so they have a tendency to gripe about it. And picking on IBM is like picking on the government — it's a big target with broad shoulders."

Beam also noted that the same customers who complain about IBM are, in most cases, likely to continue to purchase IBM hardware. "They complain, but they come back," he said.

One shocking discovery of the survey was the high rate of machines rated dead on arrival (DOA). The DOA rating was given for any instance in which the PC was inoperable when first installed. IBM scored the worst in this regard, with 2.33% of the 215 Personal System/2 Model 80s surveyed listed as DOA.

IN BRIEF

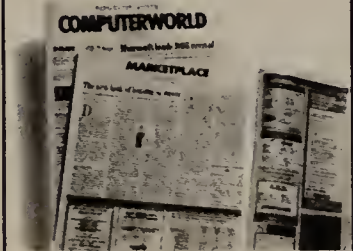
CA slashes Cricket price

■ To introduce its new Microsoft Corp. Windows-based image processing software, **Computer Associates International, Inc.** announced a promotional price reduction of \$500 for Cricket Paint. The price cut lowers the cost of the personal computer-based imaging software from \$595 to \$95.

Pricing for CA-Cricket Image, an image processing system for raster-based PC graphics, was dropped from \$295 to \$92. The promotional prices will remain in effect until Jan. 31, 1993, the company said.

■ **Sytron Corp.** in Westboro, Mass., has announced the release of backup and archival software for OS/2 2.0. Sytos Plus Version 1.35 for OS/2 is reportedly the first backup-and-restore application with full support for OS/2 2.0, including backup of High Performance File System drives and use of long path names. It is available for a list price of \$295.

Check out the Marketplace Pages on Page 103.



We're Minding Ours.

At Lexmark, we take a close look at every aspect of character generation to make sure your IBM equipment delivers maximum performance.

Like this "p," generated on an IBM LaserPrinter. Even at this extreme point size, this "p" is pretty perfect.

IBM ribbons and toners are designed in tandem with the machines they fit. The result is peerless compatibility.

Our product engineers spend their time examining letters like this "q," searching for improvements in character generation.

If you own an IBM® printer or typewriter, you don't have to buy replacement ribbons and toners from the manufacturer. But you should.

Lexmark is dedicated to making sure the output of our IBM supplies is as high-quality as the IBM machines they grace. So, if it's replacement time for your IBM ribbon or toner, we suggest you give Lexmark a call, PDQ.

To order, to locate the dealer nearest you, or to receive your free catalog, call 1-800-438-2468, ext. 80. (In Canada, call 1-800-663-7662.)

Lexmark International, a former subsidiary of IBM, is an independent, worldwide company that develops, manufactures, and markets IBM personal printers, IBM typewriters, related supplies and keyboards.



IBM Supplies by

LEXMARK

Make Your Mark

IBM is a registered trademark of International Business Machines Corporation in the United States and/or other countries and is used under license. Lexmark is a trademark of Lexmark International, Inc. © 1992 Lexmark International, Inc.

Toshiba's T4400SXC: Power at a premium price

Technology Analysis — A roundup of expert opinions about new products. Summaries written by product research coordinator Derek Slater.

Toshiba America, Inc.'s T4400SXC defines the current high end of the color notebook market. The portable offers active-matrix color display and a powerful processor. Naturally, it also carries a premium price tag.

Performance: The Intel Corp. i486SX processor gives the Toshiba model a performance edge over most available notebooks.

Ease of use: Reviewers said the T4400SXC's color display is excellent, with sharply defined colors and little glare or color washout. *Infoworld* quibbled only with the lack of brightness control. The 82-key keyboard has half-size function keys.

Power supply: Tests yielded an average battery life of approximately three hours.

Service and support: Toshiba offers a one-year warranty and toll-free phone support during business hours. *Infoworld* rated the technical support as "good."

Overall: Reviewers agreed the Toshiba unit is for power users who can afford the best combination of power and sharp color display. With an 80M-byte hard disk, the T4400SXC lists for \$5,499.

Toshiba T4400SXC

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
<i>Infoworld</i> 7/27/92	Performance leader	Bright and clear active matrix	Very good	Satisfactory size and weight	Good support	Steep price
<i>PC Magazine</i> 8/92	Superior	Small screen	Decreased battery life	Small and light	Toll-free support	Pretty and fast
<i>Windows Magazine</i> 7/92	Quick	Top-notch keyboard	Three solid hours	Connector layout needs improvement	NC	Best Windows notebook available
<i>PC Week</i> 4/6/92	A champ	Crisp images	Just over 2.5 hours	RAM expandable to 20M bytes	NC	High price
<i>PC Computing</i> 9/92	Most powerful	Perfect keyboard	Favorable battery scores	Hefty	NC	Could easily replace desktop PC
Users						
Wayne Yacco, Yacco Communications	■ ■	■ ■	■	■ ■	■ ■	Power a problem with active matrix
User at a major engineering company	■ ■	■ ■	■ ■	■ ■	■	Availability and quality problems
Analysts						
Margaret Jacobs, DataPro Information Services Group	■ ■	■ ■	■ ■	■ ■	■ ■	Good
Earl Rich, Faulkner Information Services	■ ■	■ ■	■ ■	■ ■	■ ■	Very good

Key: ■ ■ Very good ■ ■ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Toshiba America Information Systems (TAIS) is an independent operating company owned by Toshiba America, Inc., which in turn is a subsidiary of Toshiba Corp. TAIS reports annual revenue of approximately \$1 billion. The company is headquartered in Irvine, Calif.

Toshiba responds

Grant Johnson, product marketing manager:

Ease of use: With the color, thin-film transistor screen, brightness control is superfluous. You don't have to optimize it like you need to with black-and-white LCD. Not a single customer has complained about the lack of a brightness control.

Overall: The street price is less than \$5,000.

Dell's 325NC: A good deal for nonpower users

Dell 325NC

Reviews	Performance	Ease of use	Power supply	Design	Service and support	Overall value
<i>Infoworld</i> 7/27/92	Good	Difficult to view from side	Excellent	Satisfactory size and weight	Excellent	Bargain-basement price
<i>PC Magazine</i> 8/92	Top quarter of its class	Generally good keyboard layout	Battery life exceeds competitors	NC	Toll-free support	A pleasure to work on
<i>Windows Magazine</i> 7/92	NC	Keyboard close to perfect	Extensive power-saving features	Exactly notebook-size	24-hour tech fax	Best all-around value
<i>PC Sources</i> 6/92	Excellent overall performance	Credible color	Better than some monochromes	Reliable	Usual high standards	Doesn't deliver no-compromise color
<i>PC Computing</i> 9/92	Blazing disk times	Problems with screens	Longer-lasting batteries	NC	NC	Easy to like
Users						
Celeste DeSalvo, J.A. Adams, Inc.	■ ■	■ ■	■	■ ■	■ ■	I'm very pleased with it
Stuart Swanson, A-tech Computer Services	■ ■	■ ■	■ ■	■ ■	NC	Lot of value for money
Analysts						
Margaret Jacobs, DataPro Information Services Group	■ ■	■ ■	■ ■	■ ■	■ ■	Dependable
Earl Rich, Faulkner Information Services	■ ■	■ ■	■ ■	■ ■	■ ■	Low resolution for 256 colors

Key: ■ ■ Very good ■ ■ Good ■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor background information

Dell, located in Austin, Texas, reported profits of \$22 million on revenue of \$458 million for the quarter ended Aug. 31. Profits and revenue were up 77% and 129%, respectively, from the same quarter last year.

Dell responds

John Biebelhausen, manager of portable systems:

Ease of use: In order to package the keyboard into an 8- by 11-in. form, you have to compromise somewhere. We do have separate F11 and F12 keys, scroll and lock keys on the top row, so it's aligned similarly to the 101-key keyboard, which isn't true of most notebooks. The color emulates all standard Video Graphics Array modes.

Passively-matrix color displays — which refresh the screen row by row instead of supplying constant power to each pixel — are generally less impressive than active matrix. However, reviewers noted that the price differential can make competent passively-matrix machines such as Dell Computer Corp.'s System 325NC an attractive buy.

Performance: Based on the Intel Corp. 80386SL chip, Dell's notebook boasts good overall performance and excellent disk speed.

Ease of use: The keyboard sports a logical layout, with a few typical notebook compromises such as half-size function keys. The color display is fine, though it produces 256 colors at a slightly reduced dot resolution (640 by 400, instead of the standard 640 by 480), according to *Windows Magazine*.

Power supply: The 325NC fared well in battery life tests. Power-saving features can extend the charge to four or more hours. The system uses nickel-hydride batteries.

Service and support: Dell's support features a one-year warranty and toll-free phone support during extended business hours.

Overall: The Dell 325NC is an excellent passively-matrix system, reviewers said. The \$2,999 price tag will appeal to users who do not need the costly benefits of active-matrix color.

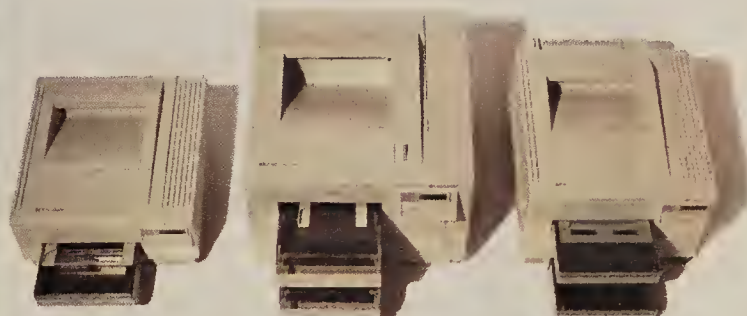


Until now,
network printers
have had the
same fifteen-foot
restriction.

**With HP network-ready
LaserJets, you can put your
printers where your users are.**

Now you can forget about tethering your printers to some faraway server. Because network-ready LaserJet printers can be placed anywhere along your network. Just plug them in as you would PCs and you're ready to roll.

Since you're putting printers by your users, it's as if you're giving them their very own personal printer. Which means they won't have to travel as far for output. Because they're closer to the printer, they can handle some of the routine maintenance tasks, such as paper loading, themselves. Best of all, you won't have to contend with extra boxes, wires or power cables.



HP LaserJet III

HP LaserJet IIISi

HP LaserJet IIID

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX®, Macintosh, and PC operating systems, call **1-800-752-0900, Ext. 3073** for the HP Connectivity Solutions Guide.



**HEWLETT
PACKARD**

*For operating HP-UX, SunOS and SCO UNIX, \$100 in additional software is required.
All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries.
© 1992 Hewlett-Packard Company PE12257

CD-ROMs ready to break out

BY MICHAEL FITZGERALD
CW STAFF

Compact disc/read-only memory (CD-ROM) technology may have yet to invade the realm of computing the way it swept through the music industry, but some analysts said they think CD-ROM is about to become a major factor in the information systems arena.

In fact, Patty Chang, an analyst at San Jose, Calif.-based market research firm Dataquest, Inc., has dubbed 1992 the year of the CD-ROM. Dataquest forecasts that the installed base of CD-ROM drives will double this year, from 1.5 mil-

lion to 3 million units, she said.

Chang said two factors are driving CD-ROM growth: Microsoft Corp. and falling prices. "Microsoft is shipping new multimedia titles every six months, and other software is coming to market. There are 3,000 available [CD-ROM] titles right now, and for multimedia we see 100 titles by the end of the year," Chang said.

As for prices, some CD-ROM drives now retail for less than \$200, and with system prices falling, users may be more likely to stick peripherals on their systems, Chang said.

Of more use to IS managers may be the upcoming CD-Recordable technology,

which allows a user to create write-once read-many (WORM) CDs. These drives cost more than \$3,000 each now, but Chang said Dataquest research shows that creating six CDs would justify buying one.

Various applications

Analysts said they think corporations will use CD-ROMs for presentations and training, while CD-Recordable drives will take advantage of the 680M-byte capacity of a CD-ROM to distribute corporate databases to salespeople and other personnel worldwide.

"The key point to remember is that CD-ROM is a publishing business," said Richard A. Bowers, executive director of the Optical Publishing Association in Co-

lumbus, Ohio. "Publishers are creating information-oriented products people want to buy, which spurs other growth."

Dataquest projects 35% annual growth rates for the CD-ROM drive industry, with 4.9 million units selling in 1996. Bowers' organization projects growth rates similar to Dataquest's.

Multimedia demand low

BY MICHAEL FITZGERALD
CW STAFF

The onslaught of multimedia personal computers in search of a market continued recently, as consumer computer giants Tandy Corp. and Packard Bell Electronics, Inc. released multimedia machines.

One analyst said the new machines, while interesting, would not spark the multimedia PC market.

"The announcements are all there and the shipments are not and are not going to be for a couple of years yet," said Richard Zwetchkenbaum, an analyst at International Data Corp. (IDC) in Framingham, Mass. Zwetchkenbaum said IDC estimates a worldwide installed base of only 100,000 multimedia PCs.

A new Sensation

Tandy, located in Fort Worth, Texas, released Sensation, its third-generation multimedia PC, and said it will market multimedia PCs in its Radio Shack stores.

Sensation will include advanced telecommunications facilities that let the computer operate as a telephone answering machine and message center; and WinMate, a new software organizer that Tandy designed to help users better organize Microsoft Corp.'s Windows package. Besides DOS 5.0 and Windows 3.1, Sensation ships with Microsoft's Works for Windows, Bookshelf for Windows and three on-line networks.

It will also have clip art, font and sound libraries, a Tandy-designed Multimedia Palette chip that gives 16 million color displays and Super VGA graphics.

Sensation, with a 25-MHz Intel Corp. i486SX chip, 4M bytes of random-access memory, a 107M-byte hard drive and a compact disc/read-only memory (CD-ROM), costs \$1,999.

Chatsworth, Calif.-based Packard Bell's 486SX/25 Multimedia Computer System has an internal CD-ROM player, a three-speaker stereo system and a Sound Blaster Pro II digital audio mixer from Creative Labs, Inc. The system, with a monitor, fax modem, 4M bytes of RAM, a 210M-byte hard drive and 1,024- by 768-pixel resolution, costs \$2,599.

PRESENTING THE AUTOMATIC CORPORATE SAFETY NET FOR ALL YOUR PC DATA.

Now Available For OS/2



Announcing unparalleled protection for your PC data.

It's called DMS/IB (Intelligent Backup). And it safeguards your corporate data better than any other PC backup product you can buy.

DMS/IB guards against corruption with its powerful data verification function. Multiple redundant indexes and a separate history file guarantee the speed and integrity of your restores.

Its support for totally automatic, unattended backups ensures data gets

backed up regularly. DMS/IB will even remind users when it's time to backup their PC data.

All of which means DMS/IB is the best corporate data protection you can buy. And its advanced backup options and multiple compression levels reduce backups to minutes per day.

In short, DMS/IB is the safety net you need to protect your corporate PC data. And it's one you can get simply by calling Sterling Software at (916) 635-5535.

 **STERLING SOFTWARE**
THE FUTURE IS STERLING.

Sterling Software, Systems Software Marketing Division, 11050 White Rock Road, #100, Rancho Cordova, CA 95670. (916) 635-5535.
Sterling Software is a registered trademark of Sterling Software, Inc. All other product names are trademarks of their respective companies.

RECRUITING TALENT FOR LOS ANGELES?

Advertise in the October 19th Western Edition when *Computerworld's* regional Careers feature examines "IS Careers in Los Angeles."
Ad Close: October 15.

800 343-6474 ext. 201



Until now, waiting for network printing has required the same amount of patience.

HP network-ready LaserJet printers help your users get their output faster.

With an HP network-ready LaserJet printer, your users won't go begging for fast output. Network-ready LaserJets avoid parallel bottlenecks and print up to fifteen times faster than ordinary machines. Since your file server is relieved of some print-server functions, your printing network flexibility increases almost immediately. You'll enjoy faster transaction times. Greater security. And increased speed across your entire system.



HP LaserJet III

HP LaserJet IIISi

HP LaserJet IIID

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$895.*

For a how-to source that provides information on hooking your LaserJets into your mainframe, minicomputer, UNIX®, Macintosh, and PC operating systems, call 1-800-752-0900, Ext. 3074 for the HP Connectivity Solutions Guide.



**HEWLETT
PACKARD**

*For operating HP-UX, SunOS and SCO UNIX, \$100 in additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries.
©1992 Hewlett-Packard Company PE12258

HELPLINE

WordPerfect for Windows



Part of a series of features dealing with questions commonly asked of personal computer software vendors' support groups. This week's article focuses on WordPerfect 5.1 for Windows.

Q Are there shortcuts for formatting?

A Using the Ruler is the easiest way to make quick formatting changes such as tabs, margins, fonts, line spacing, line justification, columns and tables. Double-clicking on the tab or margin markers or any button on the Ruler will automatically bring up the corresponding dialog box so you can fine-tune your formatting choices.

Q Can I use TrueType fonts with WordPerfect 5.1 for Windows?

A Select a Windows printer driver and you will be able

to print all TrueType fonts.

Q Since I cannot use the Alt key to name macros in WordPerfect 5.1 for Windows, is there an option?

A You can use the Ctrl or Ctrl+Shift keys instead, with one of the 26 letters in the alphabet. You can add macros to a button bar for easy access, or you can assign up to nine macros to the Macros pull-down menu. You can also remap the alphanumeric keys to invoke a macro.

Q After certain third-party Windows font packages (e.g., Adobe Type Manager, TrueType or Facelift for Windows) are installed, why don't the additional fonts display in the font list when a WordPerfect printer driver is selected?

A Most Windows font packages (with the exception of Fonts On The Fly and Morefonts) will add fonts to the Windows printer drivers but not to the WordPerfect printer drivers.

Make sure to restart Windows after installing your font package and then follow these steps to use the fonts that have been added to your Windows printer driver: Select a Windows printer driver (File/Select Printer/Windows/Select), choose the Update option (File/Select Printer/Update), then select the fonts desired (Font/Font).

Non-Windows font packages

that work in WordPerfect 5.1 for DOS, such as Bitstream Fontware, add fonts to WordPerfect printer drivers but do not add screen fonts to match the printer fonts. You can print the fonts accurately, but you may not get a true representation of them on-screen.

If you do not plan to use other WordPerfect Windows products and wish to install these files into one directory, you can use the Custom Install option when installing.

After using the Custom Install option, you can then delete the WPC directory and the files in it. (Please note: it is not recommended that network administrators install all files to one directory — the WPC directory is also used to store individual user files.)

Q Why didn't my interim release include a printer disk?

A The interim release (dated April 4, 1992) includes a full set of program disks but no printer disks. If you are installing the interim release on a machine where WordPerfect 5.1 for Windows already exists, you don't need to reinstall your printer. Each interim release disk was designed to totally replace the original corresponding disk.

If you need to reinstall the program, you can use your original printer disk to install your printer.

DEC shows Alpha-based PC at DECUS meet in Europe

Company official promises 'aggressive' pricing

BY ROBERT LINEBACK
IDG NEWS SERVICE

CANNES, France — Digital Equipment Corp. went public with a reduced instruction set computing-based personal computer, showing a working prototype system built using its Alpha chip for the first time at the European DEC Computer Users Society (DECUS) here.

DEC's head of Entry Systems Business promised to price the first Alpha-based PCs aggressively against systems using microprocessors from Intel Corp. "We believe the Alpha PC and our cost structure are very much in line with what will be 586-based PCs," said Jesse Lipcon, vice president of the Entry Systems Business operation. He said DEC has started its early support program, and it is sending "seed" units to key developers worldwide.

DEC managers claimed the first products will offer about six times the performance of an Intel 486-based 50-MHz PC but at about the same price. But when pressed for a price and an introduction date, officials declined to give specific information and said that a launch will occur after Christmas.

"The plan is to make it available within the same time frame as [Microsoft Corp.'s Windows] NT," Paul Evans, desktop marketing manager for DEC in Eu-

rope, said after he showed the prototype at the DECUS managers meeting. "We want to bring these to the market simultaneously so there won't be a lot of hardware waiting for software."

DEC intends to make Microsoft's 32-bit Windows NT operating system a key part of its 64-bit Alpha-based PC strategy. DEC officials promised high performance and a ready supply of NT applications for Alpha.

First wave

The prototype systems shown at the DECUS meeting will be the basis of the first Alpha PCs, which will be desktop models, to be followed by desktop models. The prototype has a 150-MHz Alpha chip set and is capable of delivering maximum performance of 250 million instructions per second, or about six times that of a 50-MHz 486-based PC, DEC managers said.

For some customers at the meeting, DEC's aggressive attitude on price was a welcome change from previous product introductions.

"They are facing up to the fact that the Unix world is able to offer us four times the price/performance as they have been able to, and we have many suppliers to choose from," said one DEC computer user who works at a Dutch medical center. "I think DEC can succeed."

Quattro Pro for Windows

CONTINUED FROM PAGE 37

He also noted that the Interface Builder is useful for creating applications that do not look like spreadsheets. Such a feature could be beneficial to a bank that needs loan information filled in but wants to use a nonthreatening interface, he added.

Fun features

Rock Blanco, vice president of information systems at Garber Travel in Boston, said he likes the Database Desktop, adding that the spreadsheet's use of "notebooks" to store sheets as well as its use of the last sheet in the notebook for all graphics were very intuitive.

Quattro Pro for Windows can use graphics to create slide shows. As changes are made to graphics in individual sheets, the graphics are automatically updated, as are any previously created slide shows.

Borland is making a limited offer of Quattro Pro for DOS and Windows in one package for a list price of \$495. Previous owners of Quattro Pro can move to the Windows version for \$79.95 until Dec. 31, at which time the price will increase to \$99.95.

NEW PRODUCTS

Systems

CAF Technology, Inc. has introduced AquaLite-I, a 386SXL/25-based notebook computer.

According to the company, AquaLite-I has the full features of both a mobile and a desktop computer. The product weighs 6.4 pounds and has a base unit equipped with 2M bytes of random-access memory. Via insertable memory modules, the 2M bytes of RAM are expandable to 4M, 6M or 8M bytes. One parallel and two serial ports are included, along with an external CRT port and an external keyboard port.

A 110-pin expansion port is also included for an optional Docking Station, which allows the user to expand the AquaLite-I into a desktop computer.

AquaLite-I costs \$1,995.

CAF Technology
1315 Johnson Drive
City of Industry, Calif.
91745
(818) 369-3690

Software application packages

MicroLogic Software has released Version 1.0 of TrueType for DOS.

The product enables users with DOS versions of WordPerfect Corp.'s WordPerfect, Microsoft Corp.'s Word and Microsoft's Works to use the TrueType font format. The package includes 36 TrueType typefaces, which are accessed from the regular font-selection menu of WordPerfect, Word and Works and can be printed to any ink-jet, dot matrix or laser printer, the company reported.

Thousands of customized TrueType fonts can be created by merging a TrueType typeface and MicroLogic's collection of outlines, fill patterns, backgrounds and shadows.

TrueType for DOS costs \$99.95.

MicroLogic Software
1351 Ocean Ave.
Emeryville, Calif. 94608
(510) 652-5464

Utilities

Software Quality Automation has released SQA:Replay.

According to the company, SQA:Replay is a utility that enables users to record every keystroke, mouse click and mouse movement for playback at a future time. SQA:Replay has a recording feature that allows for a point-and-click operation that does not require programming.

Replay features include automatic restoration of the desktop order before replay begins, the ability to selectively pause during playback and variable speed playback.

SQA:Replay works with IBM's OS/2 1.3 and 2.0 and on IBM AT, Personal System/2 or compatibles.

The product costs \$99.

Software Quality Automation
1 Parker St.
Lawrence, Mass. 01843
(508) 689-0182

Macintosh products

Dantz Development Corp. has released Version 1.1 of DiskFit Pro.

The product was designed to make Apple Computer, Inc. Macintosh backup more efficient. According to the company, DiskFit Pro backs up files that are on the user's hard drive and puts them onto a SmartSet of disks that maintain an up-to-date version of the hard disk in Finder format. New or changed files are replaced with incremen-

tal backups, which keeps the SmartSet compact.

DiskFit Pro costs \$125.

Dantz Development
Suite 1
1400 Shattuck Ave.
Berkeley, Calif. 94709
(510) 849-0293

Peripherals

Philips Consumer Electronics Co. has introduced FastRefresh/21, a two-page autoscanning monitor.

FastRefresh/21 can be used in computer-aided design and manufacturing, workstation, Apple Computer, Inc. Macintosh, graphics developer and desktop publishing environments. FastRefresh/21 uses a very fine pitch 0.28mm CRT and has an Invar shadow mask. Full digital front panel controls are included, and the product's microprocessor can store up to 22 video modes.

FastRefresh/21 is priced at \$3,495.

Philips Consumer Electronics
1 Philips Drive
Knoxville, Tenn. 37914
(615) 521-4316

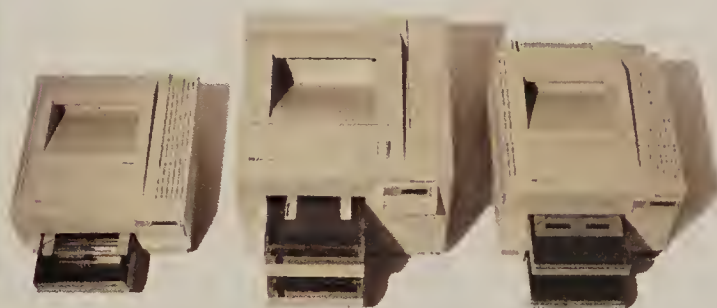


It's never been easier to manage your entire printing network.

With HP network-ready LaserJet printers, you can monitor your network right from your desk.

HP network-ready LaserJets are actually seen as additional nodes on your network. Which allow you to manage from one location and take full advantage of the features in your network management software. There's even a new diagnostic feature which lets you track the success of data transfer between your server and a network-ready LaserJet.

Network-ready LaserJets were engineered in cooperation with NOS vendors. So they work seamlessly with your current network and operating system. Including Novell Netware (Novell-certified), 3COM 3+Open, Microsoft® LAN Manager, and IBM LAN Server. Or the HP-UX, SunOS, and SCO UNIX® operating systems. Even Macintosh environments.



HP LaserJet III

HP LaserJet IIISi

HP LaserJet IIID

LaserJets become network-ready with separately purchased HP JetDirect interface cards. And now these interface cards are available for only \$695-\$895.*

For a how-to source that provides information on hooking network-ready LaserJets into your system, call **1-800-752-0900**, Ext. 3075 for the HP Connectivity Solutions Guide.



**HEWLETT
PACKARD**

*For operating HP-UX, SunOS and SCO UNIX, \$100 in additional software is required. All prices are suggested U.S. list prices. UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries. Microsoft is a U.S. registered trademark of Microsoft Corp. ©1992 Hewlett-Packard Company PE12259



OS/2

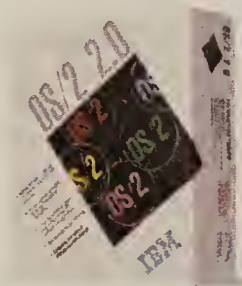
In Canada, call 1 800 465-7999. *Upgrade from Windows, \$79; upgrade from DOS, \$99; \$149 base operating system. These prices valid only when ordered directly through IBM. Proof of purchase required. Dealer prices may vary. Offer valid in U.S.A. only, expires 10/31/92. Shipping and handling not included. IBM and OS/2 are registered trademarks and OS/2 Crash Protection is a trademark of International Business Machines Corporation. Windows is a trademark of Microsoft Corporation and Adobe Type Manager is a registered trademark of Adobe Systems Incorporated. © 1992 IBM Corp.

With OS/2 2.0, you won't need one of these.

If you run more than one application at a time with DOS and Windows™, brace yourself. When one application fails, the entire system can fail. It's called a crash, but most people call it worse than that. Because each time it happens, you have to reboot your computer. If you didn't save what you were working on, you simply have to do it again. So every crash could be a huge crush. And a huge waste of time.

OS/2® 2.0 is different, because OS/2 Crash Protection™ helps shield applications from each other. In other words, each running application is self-contained, so if one goes down it won't affect the others or the operating system. No frequent systemwide crashes like in Windows. So you won't lose all your valuable work. Not to mention time. And OS/2 can also save you money, because for less than the cost of DOS and Windows, you get the capabilities of both. Plus all the added benefits of OS/2 2.0—including Adobe Type Manager®.

OS/2 2.0 lets you work like you never could before. And OS/2 Crash Protection helps keep it all from coming to a crashing halt. For an IBM authorized dealer near you, or to order OS/2 2.0 from IBM—at special promotional prices of \$79 for Windows users and \$99 from any DOS—call 1 800 3-IBM-OS2.*



Introducing OS/2 Crash Protection.

- Runs DOS, Windows and OS/2 applications from a single system.
- OS/2 Crash Protection helps shield applications from each other.
- No need to reboot your computer if an application fails.
- Supported on most IBM-compatible 386 SX PCs and above.
- OS/2 2.0 upgrade: \$79 from Windows, \$99 from any DOS.**

The IBM logo, consisting of the letters "IBM" in a stylized, blue, eight-striped font.

BUYERS' SCORECARD

HDS mainframe users most satisfied

BY DEREK SLATER
CW STAFF

On the strength of its enhanced GX line, Hitachi Data Systems Corp. received the highest user satisfaction ratings in *Computerworld's* annual mainframe Buyers' Scorecard.

Following HDS' rating of 89 were Amdahl Corp.'s 5990/5995 systems at 86 and IBM's Enterprise System/9000 line at 85. Digital Equipment Corp.'s VAX 9000 and Unisys Corp.'s 2200/A19 products received overall scores of 83 and 82, respectively.

The results closely mirror the findings of a similar survey conducted last year [CW, Nov. 18, 1991], with HDS' systems netting a higher rating than Amdahl this time around. Users indicated little change in their priorities since last year, with reliability still the foremost issue for high-capacity mainframe systems.

HDS' GX designation incorporates the older EX line as well as three new high-end models, offering users a more flexible upgrade path. The high-end GX 8000 series is roughly equivalent to IBM's ES/9000-class systems, offering up to 238 million instructions per second (MIPS) of processing power.

HDS has also announced new GX 6000 systems for users requiring somewhat less capacity.

GX systems earned the top scores in four of the six areas users considered most important, including reliability and overall performance.

Amdahl has announced an eight-way processor version of its 5995M high-end models, which could provide an advantage in the marketplace;

IBM and HDS have not yet announced eight-way models.

However, Amdahl has not yet delivered the eight-way, and its current models failed to outshine its competitors in the capacity or performance areas of the Scorecard, placing in the middle of the pack in both categories.

IBM's ES/9000 models earned a solid score comparable to last year's showing. Users graded the ES/9000 as a reliable performer and gave it the highest score in availability of software and peripherals.

However, it tied for third place in service and support. (See New Product In-Site [CW, May 11] for more user input on the ES/9000.)

The VAX 9000, DEC's first mainframe-class product, earned its best marks in vendor support and service and compatibility with installed systems, indicating that the VAX 9000 integrates smoothly with DEC's other systems.

Unisys has recently announced a number of new systems and enhancements in its mainframe product lines. The company has announced its new Extended Processing Architecture, which it says will expand users' ability to handle very large applications and combinations of applications.

Nevertheless, Unisys received the lowest user satisfaction rating for the second consecutive year. Users gave the Unisys products low satisfaction scores in both service and support and compatibility.

Buyers' Scorecard records users' satisfaction with their installed technologies. Users assign 1-to-10 ratings based on their satisfaction with their mainframe systems in 15 specific categories. (See the methodology on the following page for a complete description of the scoring process.) •

High-capacity mainframes

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 30 users each for all products, except DEC's VAX 9000 (23 responses).

Total possible score

100

Mean score

85

Product	Highest ratings	Lowest ratings
Hitachi Data Systems' GX series SCORE 89	Reliability Overall performance Compatibility with installed systems	Effective networking support Effective I/O channel control Vendor service and support
Amdahl's 5990/5995 SCORE 86	Compatibility with installed systems Reliability Efficient memory access time	Effective cache performance Effective networking support Reasonable acquisition and maintenance cost
IBM's ES/9000 SCORE 85	Reliability Availability of software and peripherals Compatibility with installed systems	Reasonable cost per processing cycle Effective networking support Ease of operation
DEC's VAX 9000 SCORE 83	Compatibility with installed systems Availability of software and peripherals Ease of migration from previous systems	Reasonable cost per processing cycle Reasonable acquisition and maintenance cost Efficient I/O channel control
Unisys' 2200/A19 SCORE 82	Reliability Efficient I/O performance Sufficient capacity	Availability of software and peripherals Reasonable acquisition and maintenance cost Effective networking support

RATINGS IN ORDER OF IMPORTANCE

HDS' GX systems earn the highest satisfaction grades in four of the Top 6 categories. DEC's VAX 9000 gets the top marks in compatibility and service and support but suffers low scores in reliability and cost.

User importance rating:

9.6 Reliability

HDS GX	9.7
IBM ES/9000	9.4
Unisys 2200/A19	9.3
Amdahl 5990/5995	9.0
DEC VAX 9000	7.4

9.1 Compatibility with installed systems

DEC VAX 9000	9.6
HDS GX	9.3
Amdahl 5990/5995	9.1
IBM ES/9000	9.1
Unisys 2200/A19	8.3

9.1 Vendor service and support

DEC VAX 9000	8.9
Amdahl 5990/5995	8.8
HDS GX	8.6
IBM ES/9000	8.6
Unisys 2200/A19	7.7

9.1 Overall performance

HDS GX	9.3
IBM ES/9000	8.9
Unisys 2200/A19	8.7
Amdahl 5990/5995	8.7
DEC VAX 9000	8.4

9.0 Reasonable cost per processing cycle

HDS GX	9.1
Amdahl 5990/5995	8.5
Unisys 2200/A19	7.7
IBM ES/9000	7.3
DEC VAX 9000	5.4

9.0 Sufficient capacity

Unisys 2200/A19	8.8
HDS GX	8.8
Amdahl 5990/5995	8.6
IBM ES/9000	8.6
DEC VAX 9000	8.3

1-800
RACAL
55

DIAL AND LEASED
LINE MODEMS



NETWORK
INTERFACE CARDS



TO MOVE MILLIONS OF BITS OF INFORMATION,

LAN-TO-LAN



THROUGH THOUSANDS OF WORKSTATIONS,

NETWORK
MANAGEMENT



TO HUNDREDS OF LOCATIONS,

WITH DOZENS OF PROTOCOLS,

LAN-TO-WAN



CALLS FOR ONE SOLUTION.

1-800
RACAL
55



NETWORK
OPERATIONS



T1 AND E1
SYSTEMS



DIGITAL
ACCESS



CONSULTING
SERVICES



FIBER PREMISES
DISTRIBUTION



PROTOCOL
CONVERSION



1-800
RACAL
55

At Racal-Datacom, we want to solve your business problems, not just your network problems. That's the networking viewpoint we've held for more than three and a half decades, while serving thousands of customers worldwide.

A NETWORKING PARTNER

We have more networking tools at our disposal than any other data communications company — more than 350 different products and systems for LANs, WANs, and internetworking. From workgroup systems to enterprise-wide solutions. Designed, manufactured, and warranted by Racal-Datacom. And controlled by a comprehensive, distributed network management system.

WITH A UNIQUE PERSPECTIVE.

What's more, our networking experts are in the field looking after your network — wherever it may be. We're your full-time, full-service, fool-proof networking partner. With everything under one roof. That's important. Because with Racal-Datacom, you'll have a single point of contact for your networking needs. You won't have the hassle — or the cost — of dealing with dozens of suppliers.

RACAL-DATACOM.

We'll help you build a network that supports your company's business vision. We'll design, integrate, and maintain your network. If you prefer, we'll even operate it for you.

You can count on our support just about anywhere in the world. With the wherewithal of a \$2.8 billion parent company and operations in more than 80 countries, we truly are a global networking company.

To see how we've helped companies like yours achieve their unique networking objectives, call us at 1-800-RACAL-55.

We'll send you a complete information package.

It could give you a whole new perspective on networking.

NETWORK
INTEGRATION



FRAME RELAY
SYSTEMS



NETWORK
ASSURANCE



CUSTOMER
TRAINING



HUBS, BRIDGES,
ROUTERS

1-800
RACAL
55



HERE'S OUR UNIQUE PERSPECTIVE



**RACAL-DATACOM PRODUCTS
AND SYSTEMS:
UNDER COMMON NETWORK
MANAGEMENT AND SUPPORTED BY
WORLDWIDE NETWORK SERVICES.**

LOCAL AREA NETWORKING

- Network interface cards
- Ethernet and token ring hubs
- Fiber premises distribution systems

INTERNETWORKING

- Ethernet and token ring concentrators
- Bridges and routers
- Protocol conversion switches
- Frame relay systems

WIDE AREA NETWORKING

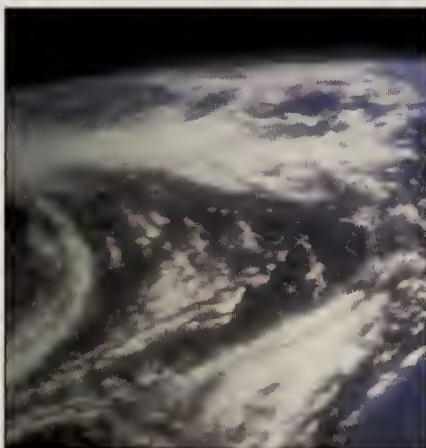
- Dial and leased line modems
- DSUs and CSUs
- T1, E1, and statistical multiplexers
- Packet switches
- Data encryptors
- Bandwidth managers
- Hybrid network systems

NETWORK SERVICES

- Consultation
- Implementation
- Training
- Network integration
- Network assurance
- Network operations
- Technical support

GLOBAL LOCATIONS

- Belgium
- France
- Germany
- Hong Kong
- Italy
- New Zealand
- Singapore
- The Netherlands
- United Kingdom
- United States
- Distribution in More Than 80 Countries



LAN-TO-LAN

NETWORK
MANAGEMENT

LAN-TO-WAN

NETWORK
INTEGRATIONFRAME RELAY
SYSTEMSNETWORK
ASSURANCE

RATINGS IN ORDER OF IMPORTANCE

(Mainframes, continued from previous page)

8.9 Reasonable acquisition and maintenance cost

HDS GX	8.8
Amdahl 5990/5995	8.2
IBM ES/9000	7.5
Unisys 2200/A19	7.2
DEC VAX 9000	6.4

8.7 Availability of software and peripherals

IBM ES/9000	9.1
DEC VAX 9000	9.1
HDS GX	9.0
Amdahl 5990/5995	8.7
Unisys 2200/A19	6.9

8.6 Ease of migration from previous systems

HDS GX	9.2
IBM ES/9000	8.9
Amdahl 5990/5995	8.8
Unisys 2200/A19	8.4

8.6 Efficient memory access time

DEC VAX 9000	8.9
HDS GX	8.9
Amdahl 5990/5995	8.8
IBM ES/9000	8.7
Unisys 2200/A19	8.6

8.6 Efficient I/O performance

Unisys 2200/A19	8.8
HDS GX	8.7
Amdahl 5990/5995	8.6
IBM ES/9000	8.5
DEC VAX 9000	8.4

8.5 Efficient I/O channel control

Unisys 2200/A19	8.6
Amdahl 5990/5995	8.6
IBM ES/9000	8.5
HDS GX	8.5
DEC VAX 9000	8.0

8.4 Effective networking support

DEC VAX 9000	9.3
Amdahl 5990/5995	8.2
HDS GX	8.0
IBM ES/9000	7.8
Unisys 2200/A19	7.4

8.3 Efficient cache performance

HDS GX	8.9
Unisys 2200/A19	8.5
IBM ES/9000	8.3
DEC VAX 9000	8.2
Amdahl 5990/5995	7.9

8.3 Ease of operation

HDS GX	8.9
DEC VAX 9000	8.7
Amdahl 5990/5995	8.5
Unisys 2200/A19	8.0
IBM ES/9000	7.9

Verbatim

What do you like best/least about this product?

(Responses are based on most frequently stated answer. Quotes are selected from user responses.)

HDS GX

Likes

Reliability

"The host system stays up - we haven't had any downtime."

Dislikes

Support

"Hitachi can't support it."

Amdahl 5990/5995

Likes

Reliability

"It gets the job done day in and day out."

Dislikes

Not state-of-the-art

"It lags behind in feature capability and lacks support for new products."

IBM ES/9000

Likes

Reliability

"It is reliable, and the vendor service is excellent."

Dislikes

Cost

"It's too slow and too expensive."

DEC VAX 9000

Likes

Performance

"We like its processing capability and the fact that you can cluster the boxes if you need to add onto it."

Dislikes

Cost

"The maintenance cost is high, and the initial purchase price was reasonable at the time, but isn't anymore."

Unisys 2200/A19

Likes

Reliability

"It performs well and doesn't go down."

Dislikes

Display quality

"Maintenance costs are too high."

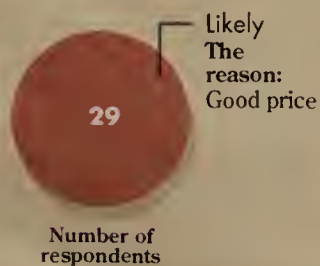
Loyalties

Would you buy the product again?

(Reasons are based on most frequently stated answer.)

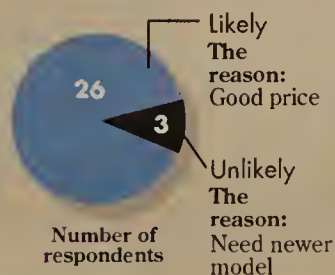
HDS GX

Responses: 29



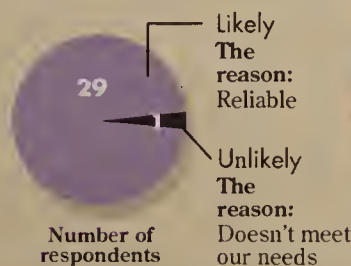
Amdahl 5990/5995

Responses: 29



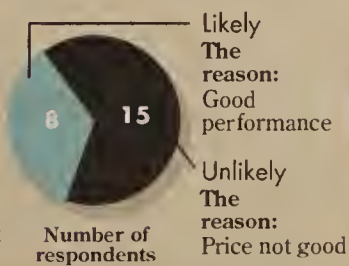
IBM ES/9000

Responses: 30



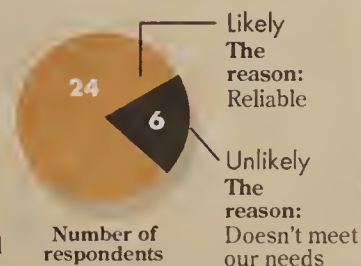
DEC VAX 9000

Responses: 23



Unisys 2200/A19

Responses: 30



Vital statistics

Total number of respondents: 143

What is your position?

CIO/Vice president.....	9
IS director.....	23
IS manager.....	15
Systems analyst.....	19
Data center or operations manager.....	32
Other.....	45

How long have you been involved with mainframe systems?

Five or more years.....	131
3-4 years.....	6
1-2 years.....	5
No response.....	1

What is your responsibility for mainframe systems?

Evaluate or recommend vendors.....	119
Determine need.....	117
Set standards for organization.....	103
Select vendors.....	101
Establish purchase agreements.....	76

In what industry does your company do the majority of its business?

Government agencies.....	33
Manufacturing.....	25
Education.....	23
Financial services.....	10
Transportation.....	9
Other.....	43

METHODOLOGY

First Market Research, an independent data collection company in Austin, Texas, conducted the survey and tabulated the results. User names were obtained from nonvendor sources. The response base was 30 users each for IBM's Enterprise System/9000, Hitachi Data Systems Corp.'s GX series, Unisys Corp.'s 2200/A19 products and Amdahl Corp.'s 5990/5995 systems; and 23 users for Digital Equipment Corp.'s VAX 9000.

Users rated their satisfaction with their installed products. They were not asked to compare or rate one product directly against another in the Scorecard.

To compute the overall score for each product, we performed the following steps:

1) Multiply the product's score in the first category by the user importance rating for that category to obtain the weighted score.

2) Repeat the process for all remaining categories.

3) Average the resulting figures for the average weighted score.

4) Convert the average weighted score to base 100. The ratio of the average weighted score to the average user importance is equal to the ratio of the overall score to 10. Numbers were rounded off where necessary.

ACKNOWLEDGMENTS

Computerworld thanks the following individuals and firms for their assistance: CW Database Division; Nancy Stewart, Dataquest, Inc.; and Susan Gannon, Technology Investment Strategies Corp.

E-Mail For Both Mainframe And LAN Is A Huge Headache...



Not!

Emc²/TAO® runs on Mainframe, AS/400, and LAN alike —
one directory, one database, one calendar,
one E-mail and office automation system, one solution.
End of headache.



FISCHER
INTERNATIONAL
SYSTEMS CORPORATION
4073 Mercantile Ave.
Naples, FL 33942
(813) 643-1500

Free!

Call for your copy of
the Gartner Group's report
"Emc²/TAO design and architecture
lead the way to LAN implementations."
1-800-237-4510

**GARTNER
GROUP
REPORT**

WORKGROUP COMPUTING

LANs • SERVERS • SOFTWARE FOR GROUPS

Wireless LANs rescue Norwest from mortgage rate turmoil

BY JOANIE M. WEXLER
CW STAFF

MINNEAPOLIS — In a volatile economy, the business volumes at financial services firms such as Norwest Mortgage, Inc. are subject to wide swings. Wireless local-area networks are one way for companies to react with catlike quickness to these sudden changes in the economic climate.

Corporate growth fueled by falling mortgage rates caused Norwest to triple the size of its enterprise network since January, convert from 2.5M bit/sec. Data-point, Inc. Arcnet LANs to 16M bit/sec. Token Ring LANs and interconnect three formerly autonomous networks in the Twin Cities area, said Eric Nystrom, an information services middle manager at Norwest.

However, "unexpected interest rate drops trigger an influx in the number of users applying for mortgages, which generates tremendous backlogs in back-office processing," he explained. He said the backlog of work could double or triple in a matter of two weeks, "and it is challenging to get the work done in a responsive period of time."

So Norwest decided to pursue

the wireless route for the flexibility of building up and tearing down workgroups at will without wasting cabling investments and

ON SITE

Norwest Mortgage Minneapolis

- **Business challenge:** To accommodate a rise in customer demand for new mortgages and mortgage refinancing because of plummeting interest rates.
- **Technology:** NCR WaveLAN wireless LANs, which quickly bring added human resource troops onto the corporate network.
- **Results:** Users can respond to unpredictable economic influence on the business; company can save money by renting additional floor space for short periods of time without losing cabling investment.

Workstations turn raw product ideas into reality

Inno Design smooths rocky path from conception of idea to production with computer technology

BY MARYFRAN JOHNSON
CW STAFF

Young S. Kim was heading home from the Comdex/Fall '90 show two years ago when the idea struck for a novel twist on notebook computer design. The president and founder of Inno Design, Inc. grabbed an American Airlines napkin and started sketching.

Today, Kim can still produce the worn paper napkin with the rough sketch that eventually became Leading Edge Products, Inc.'s sleek new laptop with the built-in trackball.

Yet while such creativity is the bedrock of this 10-year-old industrial design company in Sunnyvale, Calif., it was graphical workstation technology that turned Kim's quick sketch into a three-dimensional, highly realistic im-

age of a product in the offing.

"You need a good idea, and you need to get it through quickly so the client can see it," Kim said. "Even trained designers are not always sure if something will look

great. The computer is a great tool to generate various concepts."

Inno, which takes on about 30 projects annually, specializes in design work for clients that man-

ufacture a range of goods from consumer electronics and kitchen appliances to laptop computers. The company is also preparing to launch another line of work by licensing its own product design ideas to interested manufacturers.

As its core business technology, Inno uses a pair of Silicon Graphics, Inc. Personal Iris workstations running industrial design software from Toronto-based Alias Research, Inc. A Sun Microsystems, Inc. workstation assists on the mechanical engineering end with ProEngineer software from Parametric Technology Corp., and a pair of Intel Corp. i486-based personal computers provide CorelDraw software from Corel Systems Corp.

The trip from rough sketch to finished design ordinarily takes

with the goal of recycling the wireless LAN equipment for future uses such as other sudden work-load increases.

Users in the makeshift workgroup are postclosing analysts who review documents prior to selling mortgages to investors. On average, Norwest builds a 10-to 12-person analyst workgroup and melds it in with its enterprise 600-user network.

NCR Corp.'s WaveLAN leverages spread-spectrum technology, which, unlike infrared schemes, requires no line of site between transmitting nodes.

Norwest was concerned about potential interference because it is situated directly across the street from the IDS Tower — one of the tallest buildings in Minneapolis — from which radio and television signals are broadcast.

"But we haven't had a single interruption," Nystrom said. "With spread spectrum, there is not much chance of interference because broadcasts occur on many frequencies simultaneously," he explained.

The fairly rigorous process Norwest must go through prior to selling loans to investors requires hiring more employees.

Continued on page 54

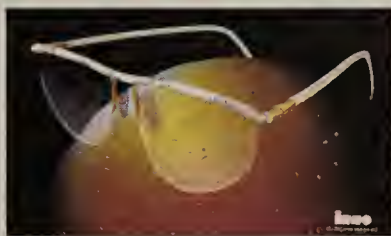
ON SITE

Inno Design, Inc. Sunnyvale, Calif.

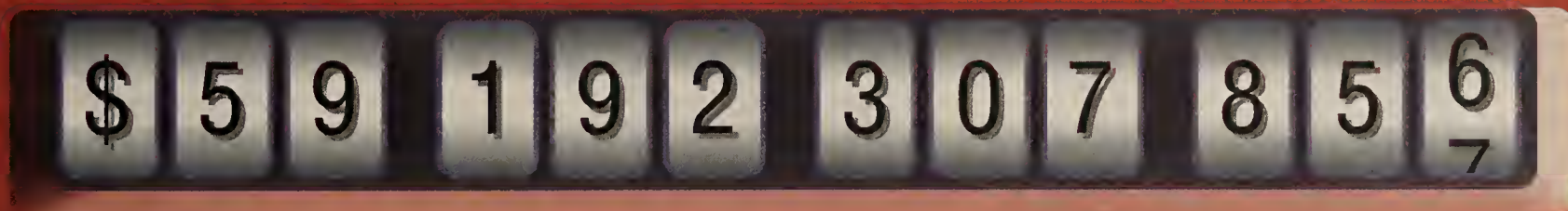
- **Challenge:** To use advanced computer graphics and design tools to create realistic images of design concepts and products.

- **Technology:** Two Silicon Graphics, Inc. Personal Iris 25TG and 35TG turbographics workstations running Designer 2.0 software from Alias Research, Inc. and one Sun Microsystems, Inc. workstation running ProEngineer software from Parametric Technology Corp.

- **Results:** Ability to test-market various design concepts before prototyping, faster time to market for designs and greater client satisfaction.



A taste of Inno Design's work



By the end of this week Computerworld readers will have spent over **\$59.2 Billion** on Information Technology this year — representing nearly half of all IT spending to date in 1992.

COMPUTERWORLD

The Newspaper of IS

Source: IDG Research Services, Fall 1991

Turning raw ideas into reality

CONTINUED FROM PAGE 51

several weeks when done by hand. Computer rendering, which Inno moved to three years ago, covers the same ground in a matter of hours.

The firm recently turned that speed to its advantage with a gas range design for a Korean manufacturer who wanted to "test drive" the concept with a focus group of consumers. "We did a slide show with pictures of the product that were created on the SGI workstations, and these customers liked it right away," Kim recalled. "Our clients really appreciate not only the design, but the assurance from potential users. It gives them a competitive edge."

Inno also capitalizes on its computer smarts in its advertising, which highlights "time to market" as the key benefit in using computer-aided industrial design in the creative process. Three-dimensional computer-aided industrial design modeling allows Inno designers to quickly and accurately visualize a concept, then refine and test their ideas.

So far, the only significant stumbling block with the technology has been the lack of compatibility between packages such as ProEngineer and Alias' Designer software, Kim said.

With about \$2 million in annual reve-

nue, Inno has invested at least \$500,000 in its computer technology, the chief executive officer noted. His 12-member firm — whose name is short for innovative — employs nine designers, about half of whom are experts in computer-aided design.

Inno's work made it to the cover of the international *Design* magazine in November 1991, with a picture of "The Lobster," a striking black and red portable butane burner for campers. The company also designed the ProTech 2 golf travel bag, which won *Businessweek's* best design of the year for 1991.

"Designers are not just stylists anymore," Kim said. "We're not engineers either, but we do track the trade shows so we have ideas that are practical and feasible."

IN BRIEF

NetWare adds host print tool

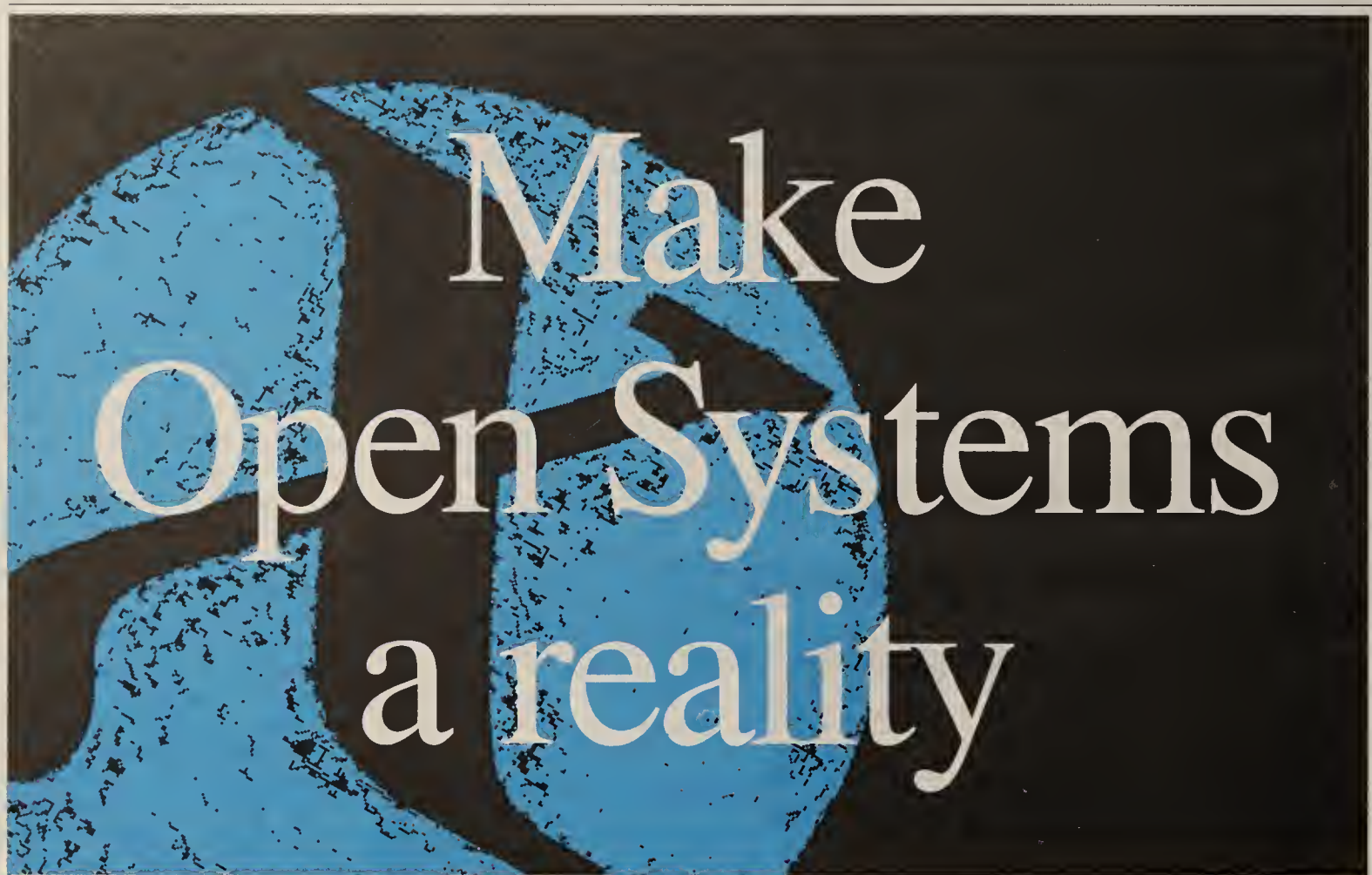
■ **Novell, Inc.** in Provo, Utah, is now shipping NetWare HostPrint Version 1.0, a product that was designed to make any printer on a local-area network available for host print jobs. HostPrint is a NetWare Loadable Module that runs on Novell's NetWare for SAA product. It moves the IBM print emulation sessions from the workstation to the server, thus reducing network traffic, eliminating the need for a dedicated workstation and increasing the number of print sessions available to network users, according to Novell.

NetWare HostPrint is available now and is priced from \$595 to \$4,995, depending on the number of print sessions supported.

Novell also announced that it is now providing a free utility to ease migration from the NetWare 2.x line to NetWare 3.11. The new NetWare Migration Utility 1.0 is available free of charge from Novell's NetWare and NetWare Express bulletin boards. It saves upgrade time by translating NetWare 2.x-based information to NetWare 3.11 bindery format and provides simple or customized migration options.

■ Unix systems vendor **Harris Corp.** in Fort Lauderdale, Fla., recently declared itself the first company to comply with the IEEE open systems standard for Posix 1003.5, which defines the interface between the Ada language and the operating system. System designers using Harris' Night Hawk line of computer and Ada can now build high-performance, multithreaded Ada applications that are readily portable to other systems running Posix-compliant Ada.

■ Milpitas, Calif.-based server maker **NetFrame Systems, Inc.** recently introduced a low-end superserver with what the vendor claims are high-availability features. The NF200ES is based on a single Intel Corp. 25-MHz i486DX microprocessor and can support up to three dedicated 80386 I/O processors. Among its high-availability features are parity checking, error-correcting random-access memory and hot-swappable hard disks. Pricing for the system starts at \$14,950.



XTRA 92, the International Forum on Open Systems, is at the heart of open systems progress. It gives users their best chance to gain the most up-to-date information on the progress of open systems as a practical proposition. But XTRA 92 is more than just a congress — it is the focus for the future of open systems.

OPEN SYSTEMS — DRIVE THE FUTURE

Xtra Congress delegates will be the first to get a full briefing on the 1992 World Survey on Open Systems — a comprehensive international survey of how suppliers are meeting user demands for standards based systems, today and in the future.

Access to the World Survey could justify the cost of attending. But there's more.

IMPLEMENTOR OR PLANNER?

Whatever your company's business, whatever your organization's task, the knowledge you will gain from Xtra will be vital in planning the future.

And that applies whether you are implementing open systems as a corporate strategy, experimenting or evaluating whether it might be worthwhile.

There are high-level plenary sessions with world-renowned industry experts, business environment sessions, update sessions on buying and using open systems, as well as the in-depth analysis of critical issues that have been a feature of the Xtra Congress in each of its four successful years.

XTRA 92

The International Forum on Open Systems

30 November — 2 December 1992


The Capital Hilton, Washington DC, USA.

For further information on XTRA 92 please complete this form and return to XTRA 92 Registrations Department, X/Open Company Ltd, 3141 Fairview Park Drive, Falls Church, VA 22042-4501, USA. Telephone: (703) 876 0044 Fax: (703) 876 0050

Name _____ Dr/Mr/Mrs/Ms _____
Job Title/Position _____
Organization _____
City _____

State _____
Zip _____
Telephone _____

This event is being managed by: _____ On behalf of: _____

 **BLenheim ONLINE**

Blenheim Online is a division of Blenheim Exhibitions and Conferences Ltd.

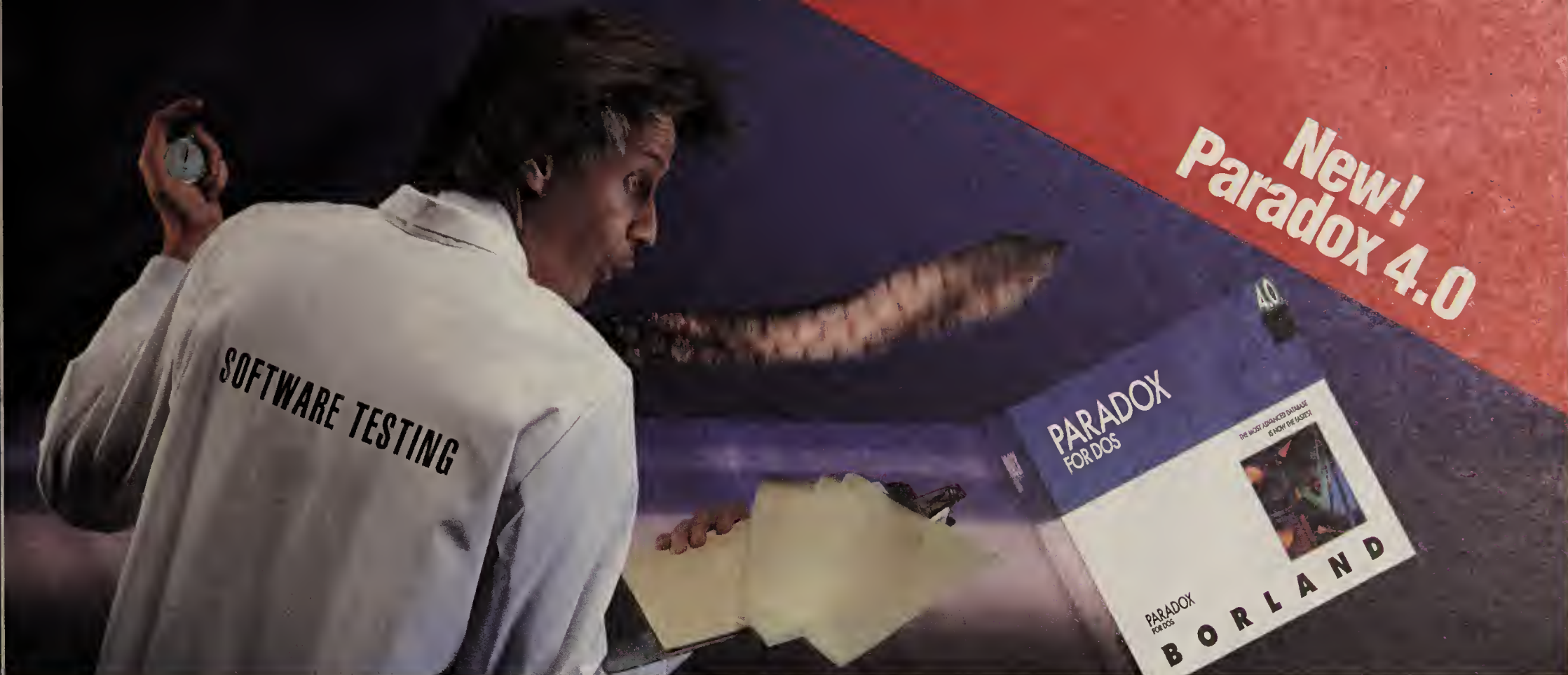
x/Open[®]

CW/09/92

SAVE MONEY RECRUITING STAFF.

Advertise in Computerworld's regional careers pages. They work.

800-343-6474
x201



**New!
Paradox 4.0**

Paradox is fastest!

Test results prove that the new Paradox® 4.0 is the world's fastest relational database! Thanks to Borland's new WarpSpeed™ performance, Paradox 4.0 sets a new standard for both network and standalone performance. For you this means faster answers to queries, faster data access, and faster multiuser applications.

New Windows-like interface

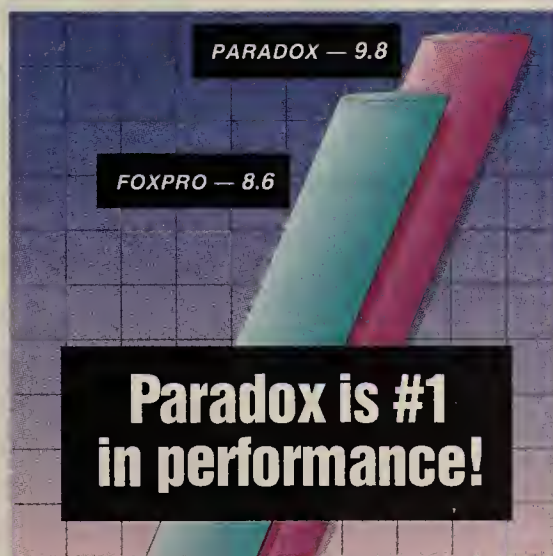
A new Windows-like interface makes using Paradox 4.0 more intuitive than any other database. The context-sensitive SpeedBar™ gives you instant access to your frequently used commands and features. Movable, resizable windows, pull-down menus, dialog boxes, and mouse support make creating and editing your database simple.

The fastest QBE yet

You'll move through your work faster with Paradox 4.0's built-in query optimizer. It enhances QBE by automatically finding the fastest path to the answers you're seeking. Plus, multi-table forms and reports make everything from data entry to presentations a snap—all without programming.

New! Memo fields

Paradox 4.0 comes with new, all-purpose memo fields that allow you to add virtually



Software Digest's NSTL May 1992 report rates Paradox highest of all databases tested in Overall Power and Performance.

unlimited text anywhere in your application. Plus you can store anything you want in the new binary field—documents, bit-mapped graphics, multimedia data—and manipulate it under program control.

SQL connectivity

Paradox 4.0 and Paradox SQL Link* provide the most SQL connections of any PC relational database. You can seamlessly access data on remote SQL database servers and then work

with it using Paradox's features like QBE, reports, and more.

More powerful applications

PAL™ (Paradox Application Language) is a powerful, high-level language that lets users create sophisticated applications fast. And new PAL features let users build custom applications that incorporate mouse control, pull-down and pop-up menus, dialog boxes with push buttons, and more.

So when you feel the need for speed, go with Borland's new Paradox 4.0.

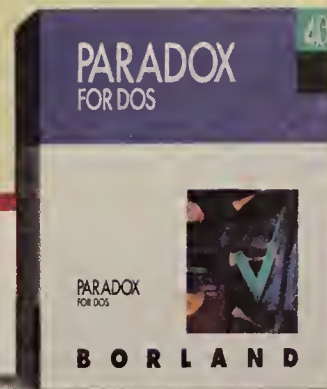
**Put the world's most
advanced database
to work for you—FAST!**

To upgrade or order,
see your dealer today or call

1-800-331-0877, ext. 5889

In Canada, call 1-800-461-3327

Call now!



B O R L A N D

Software Craftsmanship

*Paradox SQL Link sold separately. Copyright © 1992 Borland International, Inc. All rights reserved. All Borland product names are trademarks of Borland International, Inc. Software Digest Rating Report, Multiuser Database Programs, May 1992, Vol. 9, No. 2. BI 1573

Social Security division awards LAN contract

BY MICHELE DOSTERT
CW STAFF

The Social Security Administration's Office of Hearing Appeals (OHA) will soon install local-area networks in 152 sites nationwide.

Hughes LAN Systems, Inc., a Mountain View, Calif.-based subsidiary of GM Hughes Electronics, has won the \$7.4 million contract to install Token Ring LANs running Novell, Inc.'s NetWare.

Don Lovett, program manager at the General Services Administration's Federal Systems Integration and Management Center, said most OHA offices currently have systems from Wang Laboratories, Inc., but Wang's current bankruptcy court filing was not a factor in the move. "OHA has been planning to move to LANs for around two years," he said. "They expect to save a lot in both system costs and increased productivity."

According to Lovett, the OHA has already developed some of its own applications, using stand-

alone personal computer-based databases. These applications will be modified to work on LANs and then replicated in all OHA offices.

The remote LANs will be bridged into the central headquarters LAN, which will then be bridged into the Social Security Administration's mainframes.

Like many government agencies, the Social Security Administration is trying to standardize its computing purchases. The agency chose Token Ring as one of its core technologies. "We tried to promote a configuration that would be standardized at most sites and could be centrally managed," Lovett said. "It saves a lot of time if systems people have one standard

configuration to manage."

Under the terms of the contract, Hughes and its subcontractors will handle installations. Hughes will also provide documentation and training, with LAN maintenance as an optional part of the contract.

Hughes LAN Systems executives see the OHA contract as the first step in building their presence in government LANs.

"We won this contract because we researched the LAN market and used products from many different vendors to build the most cost-effective solution," said Ed Barrera, director of data network services at Hughes.

"We are now using what we learned to compete for several other government contracts," Barrera added.

James Kerrigan, manager of federal programs at G2 Research, Inc. in McLean, Va., said he thinks this contract may indeed help establish Hughes LAN Systems as a government player.

"IT SAVES A lot of time if systems people have one standard configuration to manage."

DON LOVETT
GENERAL SERVICES

Wireless revamps at Norwest

CONTINUED FROM PAGE 51

including temporary help, and finding additional floor space and automation. "It is difficult for us to put in an economical LAN without being able to plan or knowing how long we're going to need it," Nystrom said.

To process mortgages, Norwest personnel need access to mortgage documents and applications such as file management, insurance and trust on distributed computers and the mainframe. The wireless network segment is bridged into the corporate backbone to provide this access.

To install a wireless network

segment, the company runs one copper cabling connection to the WaveLAN-dedicated floor. A dedicated personal computer with both a WaveLAN adapter and a Token Ring adapter acts as a bridge between the WaveLAN network on that floor and the Token Ring networks.

On the "WaveLAN floor," a WaveLAN card attached to an antenna about 4 in. square and half an inch deep is attached to the wall with Velcro.

"The cost savings come from being able to reuse the cards and not be bound to the cabling," Nystrom said.

Cables unnecessary

The wireless LAN market is expected to exceed 100% annual growth during the next few years



*Estimated

Source: Computer Intelligence

Wireless gets unique standard

The Institute of Electrical and Electronics Engineers, Inc. 802.11 committee, charged with constructing a set of standards governing the operation of wireless LANs, was in session last week in Dayton, Ohio.

Running about a year behind schedule in defining a common set of physical-layer and media-access control specifications for both infrared and radio-based LANs, the committee has broken into functional groups to speed up defining an interface between the two layers of the wireless topology, explained committee member Paul Nikolich.

Because of the peculiarities of wireless media, the 802.11 standards will comprise a unique topology and bridge to wired LANs such as Ethernets and Token Rings, Nikolich said.

"With wired LANs, you have a well-defined environment — you either have a good signal or you don't," Nikolich explained. "But with wireless, it's always changing."

Developing an infrastructure for tying wireless and wired LANs was one agenda item at last week's meeting.

Also on the agenda was a discussion on special problems with running time-bound services, such as delay-sensitive audio and video, across wireless media, said Donald C. Johnson, another committee member.

In addition, the committee collected comments to submit to the Federal Communications Commission regarding a proposed rule to set aside spectrum dedicated to personal communications systems, Johnson said.

JOANIE M. WEXLER

SPARCstation clone maker enters fray

Electronics unit targets commercial sector

BY MARYFRAN JOHNSON
CW STAFF

SAN JOSE, Calif. — Another player has joined in the Scalable Processor Architecture (SPARC) market, equipped with a strategy that could set it apart from the average clone vendor.

Axil Workstations, Inc., a division of \$50 billion Hyundai Electronics America, last week introduced two lines of Sun Microsystems, Inc. SPARCstation 10 clones and compatibles.

Axil's Hyundai workstation line is pure clone, while its Axil-Station line is "differentiated" with fax and modem capabilities built into the SPARC motherboard — rather than the Integrated Services Digital Network interface that Sun built into the original SPARCstation 10.

New pitch

Rather than competing head-to-head with Sun in technical workstation markets, Axil decided to pitch its differentiated SPARC line at new, expanding markets in commercial arenas such as manufacturing and health care. Along with the built-in fax and modem, the company said it will include voice-mail capability next January.

"The key to success in the commercial market will be our ability to hide Unix from the end user. That's where a lot of our efforts will be going in the future," said Mark Johnston, president of Axil.

To add value beyond a SPARC clone, Axil has its own research and development team working on Application Specific Integrated Circuits development and memory modules, Johnston said.

"Our vision is a computer you can pull out of the box, plug into the phone jack, and it automatically dials back to [Axil's corporate office] to download application software for a 90-day free trial," he said.

Looking into crystal ball

Analysts said that the futuristic vision of "plug-and-play workstations" is one that many vendors are pursuing these days, particularly on the low end.

"In general, people have realized there is not going to be such a thing as a PC revolution in the SPARC community," said John Morrell, an analyst at International Data Corp. in Framingham, Mass. "Targeted strategies are the way to go with small companies."

Johnston said there are many reasons a straightforward clone

strategy will not work in the SPARC market, such as:

- IBM did not aggressively defend its personal computer turf, whereas Sun did so from the beginning.
- PC microprocessor development is controlled by Intel Corp., but SPARC chips fall under the broader purview of the SPARC International consortium.
- The PC market is mature and commodity-oriented while the SPARC market is still developing and leans toward value-added resellers.
- Workstation customers are more technically oriented and demanding than PC users, particularly in terms of service and support.

Winter activity

Shipment of Axil's SPARCstation 10 clones and compatibles is expected to begin in December, depending on the availability of Sun's Solaris 1.1 operating system and Texas Instruments, Inc.'s SuperSPARC chip set.

The Hyundai line of SPARCstation 2 clones began shipping this month, priced at \$13,000, or about 20% cheaper than the Sun original.

One of Axil's new customers is Roger Watson, director of sales at Outsource, Inc., a Los Angeles-based business specializing in technical source-code documentation.

Outsource runs its business on three SPARCstations but turned to the clone market recently for an extra machine at lower cost.

Confidence earned

"I had to feel some confidence in these systems before I let them run my business. I can't afford to make a mistake," said Watson, who bought the Hyundai SPARCstation 2 clone.

"The design is better than Sun's, and when we had a potential problem their sales and support people were on it like vultures and dealt with it," Watson added.

WorkGroup Technologies, Inc., a market research firm in Hampton, N.H., projected that shipments of SPARC compatibles will grow by 47% annually through 1995, broadening the current installed base of 32,000 systems to 90,000 systems by the mid-decade mark.

Still, the vast share of the SPARC market still belongs to Sun. Dataquest, Inc. in San Jose, Calif., released figure showing that of 210,000 SPARC systems shipped in 1991, at least 187,000 were Sun machines.

NEW! VERSION 1.5

dBASE IV

Why it's smarter to go with #1



Now there's an easier-to-use, faster and more powerful dBASE®. It's packed with the features you've asked for most, making it smarter than

ever to use the world's standard PC database.

Working smarter is faster

With new dBASE IV®, you get the job done faster because you work smarter. Smarter because new **IQ!**™ optimization technology automatically selects the fastest method to retrieve your data. Smarter because you can create tables, forms, reports, queries and menus in record time—*without programming*.

Smarter because you get 40 different work areas for easier management of large applications. Plus mouse support for fingertip access to features, an enhanced RUN function to run popular DOS applications from within dBASE, and comprehensive multiuser capabilities. All of which means you maintain tight data integrity, more flexibility and more support than ever before.



Advanced design tools build applications faster

dBASE IV's easy-to-use Control Center comes complete with an innovative set of design tools, including report, form and label generators that help you create your applications quicker. And the Control Center's open architecture makes it easy to enhance or customize your own applications by incorporating any of the third-party add-on products available for dBASE.

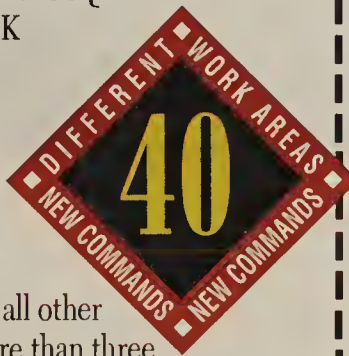
Faster applications development

The industry-standard dBASE language comes with a host of improvements that speed development:

- ♦ Integrated debugger and a built-in applications generator
- ♦ More than 40 new commands, functions and keywords—Template Language now included
- ♦ C language-like low-level file I/O
- ♦ IBM® SAA-compliant SQL
- ♦ Advanced BLANK support

Being the standard means world-class support

dBASE has outsold all other databases. With more than three million users and the world's largest community of custom application



developers and trainers, dBASE supports your data management needs in ways only the worldwide standard can. Now it's smarter than ever to go with #1.

Get more than \$250 in software FREE!

Now with every purchase of dBASE IV v1.5 we're giving away a Protection Pack that includes Central Point Software's Backup and Anti-Virus programs, *free** (retail value \$258). So you get the best database *and* the best data protection.

See your dealer today. Or call 1-800-331-0877, ext. 6450 for more information.
In Canada call 1-800-461-3327

YES! Send me my free Pro Pack Software!

Check DOS disk size required: ☐ 5 1/4" ☐ 3 1/2"

dBASE IV v1.5 Serial #: _____

Name: _____

Company: _____

Address: _____
(We cannot ship to P.O. Boxes.)

City/State/Province: _____

Zip/Postal Code: _____

Phone: () _____ FAX: () _____

COMPLETE this coupon, ATTACH a copy of your sales receipt (or a copy of purchase order and billing invoice) AND ENCLOSE \$9.00 U.S. for shipping and handling (check or money order payable to Borland International, Inc.).

Send to: Borland's Pro Pack Offer, P.O. Box 7243, San Francisco, California 94120-7243.

Offer good in U.S. and Canada only on dBASE IV v1.5 purchases. Offer good while supplies last. Only original coupons will be accepted. No responsibility is assumed for lost, late, misdirected or destroyed mail. Please allow 4-6 weeks for delivery. Subject to all local, state and federal regulations. Void where prohibited. Offer not valid for Upgrades, Competitive Upgrades, LAN Packs, Volume Packs, or any other Borland promotion except dBASE IV v1.5. Distributors and resellers not eligible to participate. Central Point is a registered trademark of Central Point Software.

BORLAND

dBASE IV from Ashton-Tate®, a Borland Company

*Plus \$9.00 U.S. (shipping and handling). Copyright © 1992 Borland International, Inc. All rights reserved. Ashton-Tate, dBASE and dBASE IV are registered trademarks of Borland International, Inc. BI 4227.1

Multivendor networks.



Getting all the beasts to

The trouble with computer networks is they come in so many different species, which, as you may know, don't always get along. Conflicts between networks can turn your business into a real zoo.

Things got this way because networking standards evolved on separate paths, for reaching different goals. But today's goal is to pull things together, and nobody can help you do it better than IBM.

We've not only built more networks than anyone (over 200,000), we've built all kinds. And we support all the leading standards, not just with words, but with solid products and services. (Ironically, while some still

The trademarks are owned as follows: ADC, ADC Telecommunications Inc.; Appletalk and Mac, Apple Computer Inc.; DEC and DEC VAX, Digital Equipment Corp.; Caterpillar, Caterpillar Inc.; HP, Hewlett-Packard Corp.; Sun, Sun Microsystems Inc.; UNIX, UNIX Systems Laboratories Inc.; PS/2 and NetView, IBM Corp. © 1992 IBM Corp.



behave takes real expertise.

think of TCP/IP as a "non-IBM" standard, we offer as many TCP/IP products as anybody.)

So if you have a DEC® system in one department, Appletalk® in another, IBM checkout lines in your stores and a supplier using UNIX® workstations, we can make them all work together. And not by patchwork, either. IBM's new router technology is straightforward and fits naturally with your existing investments.

What's more, we'll not only integrate your networks, we'll stay on to manage them for you, if you like.

And to give you more freedom in the future, we're forming numerous alliances with our competitors. You

want products that communicate after you buy them, so we're talking to each other now.

We'd also like to hear from you. For Caterpillar, IBM NetView™ is managing *fifteen* kinds of networks as if they were one. And for ADC® Telecommunications, we're designing a network of IBM mainframes, PS/2®s, Macs® and DEC VAX®s, plus Sun® and HP® workstations, using such diverse protocols as SNA, TCP/IP and Appletalk, over Ethernet and Token-Ring.

We can perform similar feats for you, but only if you call us. At 1 800-IBM-6676, extension 725.



NEW PRODUCTS

Unix

Tricord Systems, Inc. has announced Tricord Unix/FT, a shell for networks running The Santa Cruz Operation's SCO Unix Version 3.2 and above.

Unix/FT operates on a Tricord PowerFrame server, which enables the PowerFrame server to be used as a hardware platform for performance features and fault tolerance.

The product is a software implementation of redundant arrays of inexpensive disks Level 1 that allows SCO Unix users to configure drives into mirrored arrays for fault-tolerant operation, according to

the company.

To automatically replace failed drives, users can assign one or more disk drives as hot spares.

The Unix/FT software shell costs \$350.

Tricord Systems
3750 Annapolis Lane
Plymouth, Minn. 55447
(612) 557-9005

Spry, Inc. has introduced SprySoft NetWare Client for Unix.

The product enables a Unix workstation to become a Novell, Inc. NetWare-compatible client for file and print services from the NetWare server, the

company reported. While using native Unix commands, users running Unix applications can share data with NetWare local-area networks, according to the company.

SprySoft works with NetWare servers on network topologies that support Novell IPX/SPX, including Ethernet, Token Ring and Arcnet.

A single-user version on The Santa Cruz Operation's SCO Unix platform costs \$495, and a single-user version on Sun Microsystems, Inc. SunOS costs \$995.

Spry
Suite 150
1319 Dexter Ave. North
Seattle, Wash. 98109
(206) 286-1412

Corel Systems Corp. has released CorelDraw Version 2.01.1 for Unix.

The product is a graphics program that now offers additional support for a variety of Unix platforms including Hewlett-Packard Co.'s Apollo Series 700 and Sun Microsystems, Inc. Open Look SPARCstation.

CorelDraw also runs with the Open Software Foundation's Motif and offers 46 new fonts and more than 2,500 new clip-art images. CorelDraw 2.01.1 can customize print commands and has expanded support for more X Window System terminals.

The product costs \$895 for a single-user version and \$745 for additional licenses.

Corel
1600 Carling Ave.
Ottawa, Ontario
K1Z 8R7
(613) 728-8200

Legato Systems, Inc. has introduced Legato NetWorker, a backup and recovery software package for Unix networks.

According to the company, Legato NetWorker is bundled with the NetWorker Jukebox Module and is fully integrated with the EXB-120 Cartridge Handling Subsystem (CHS) from Exabyte Corp.

Approximately 580G bytes of unattended backup and recovery services to a multiple 8mm tape are provided by the EXB-120 CHS. NetWorker backs up Unix file servers and workstations from IBM, Digital Equipment Corp., Hewlett-Packard Co. and Sony Corp., among others.

The NetWorker Jukebox Module with the EXB-120 CHS costs \$100,000.

Legato Systems
260 Sheridan Ave.
Palo Alto, Calif. 94306
(415) 329-7880

Diagnostic equipment

Landmark Research International Corp. has upgraded PC Probe Version 3.0, a diagnostic software program.

The program enables users to run up to 150 tests on a system, such as benchmark tests, virus protection and system information. Features include Super VGA video mode tests, password protection and an AT Centrally Managed OSI Protocol for TCP/IP editor.

According to the company, because tests can be run in single-test or timed-batch mode, Version 3.0 has the capability to isolate intermittent errors overnight. Users also have the option of running tests from a distant system through a modem.

PC Probe Version 3.0 costs \$99.
Landmark Research International
703 Grand Central St.
Clearwater, Fla. 34616
(813) 443-1331

NEED GLOBAL SALES LEADS?

Advertise in
Computerworld's
new Global
Response Cards.

Next ad close: Sept 25

800-343-6474
x757

In tough neighborhoods like this,



you need tough printers like these.



FREE*
1-Year On-Site
Warranty

Corporate America is a tough place. If you don't perform, you're out. Which is why American corporate biggies use C. Itoh line printers from CIE America.

Start with the fact that they're designed for heavy duty cycles and long term reliability. So they're always available for your toughest printing chores, 24 hours a day, 365 days a year, year-in, year-out.

They're fast, too. At 540 and 940 lpm, up to 25% faster than their competition. They're totally networkable. And they're

more versatile because they offer more standard emulations and interfaces.

All C. Itoh printers offer consistent, easy-to-use controls. Combine this with advanced paper and forms handling and efficiency soars.

Printing costs are under a penny per page, compared to over 3 cents for lasers. Total cost of ownership is as low as it can go.

CIE
America, inc.
A C. Itoh/Citizen Company

So when it comes to your toughest printing requirements, CIE America is the place to call.

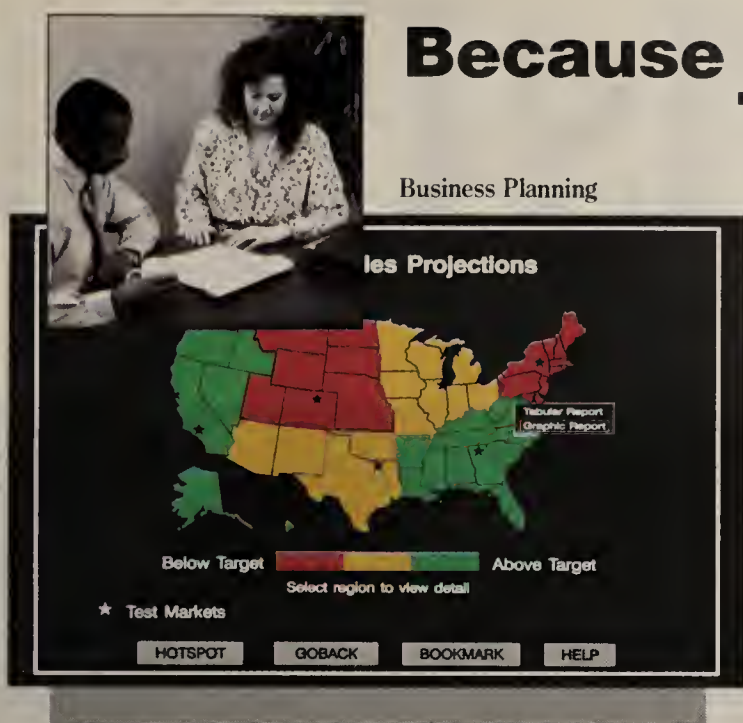
(800) 877-1421, ext. 4494

*Limited time offer, some restrictions apply. Call for complete details

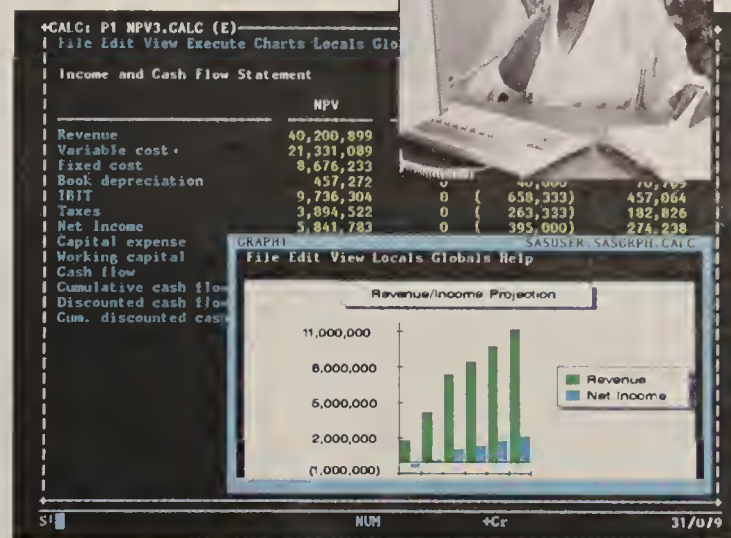
Lasting impressions come first at CIE America.

© 1992 CIE America, Inc. All copyrights and trademarks acknowledged.

**Because There Are More of Them
Than There Are
of You...**



Financial Analysis/Reporting



The SAS[®] System for Information Delivery



EIS

The CEO needs visual checks on all the factors critical to the success of the business. The CFO wants a "small" change in the financial reports. The marketing VP is anxiously awaiting pricing models. And they're *still* waiting for inventory and quality monitoring systems out on the factory floor. How can one IS manager—with so little time, so few resources, and so many budget constraints—meet the diverse needs of so many clients? The answer is the SAS System for Information Delivery.

Integrated Applications for Enterprise-Wide Productivity

Unlike stand-alone solutions—which drain your software budget and drive up training and support costs—the SAS System gives you a cohesive, enterprise-wide application strategy. One that fits the needs of the executive suite, the manufacturing floor, and everywhere in between. One that supports cooperative processing across hardware platforms. And one that responds immediately to new or shifting applications demands. Virtually any application that involves accessing, managing, analyzing, and presenting data is available within the SAS System's information delivery environment.

Call Today for a Free Video Preview of the World's Leading Information Delivery System.

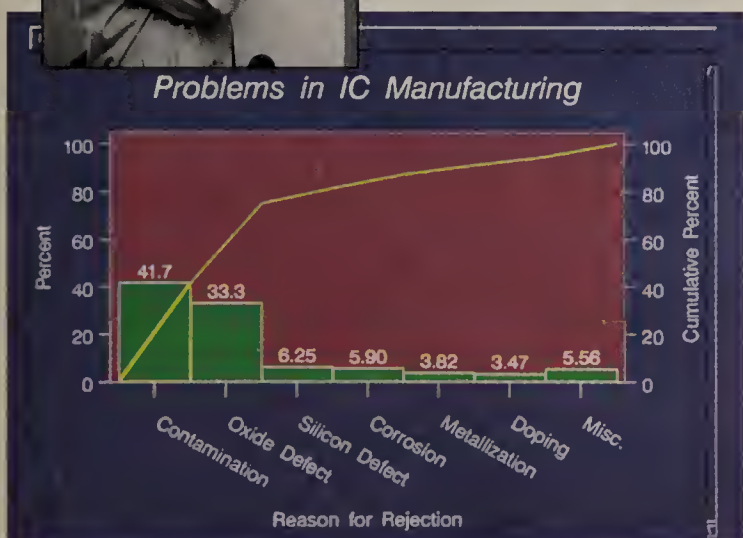
See for yourself why the SAS System is the only software you'll ever need. Give us a call at 919-677-8200 for your free video preview. Also ask for details about the free SAS System Executive Briefing...coming soon in your area.



SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc. Copyright © 1992 by SAS Institute Inc. Printed in the USA.

Quality Improvement



Data Visualization



Only NCR Is Putt



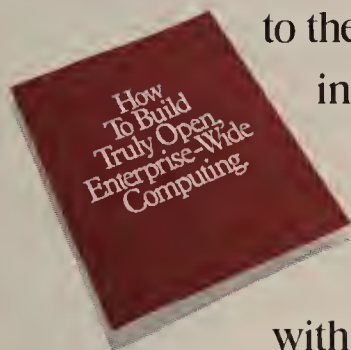
ing It All Together.

Open, Cooperative Computing Offers The World's Most Complete Open Computing Solutions.

NCR has emerged as the leading supplier of a new way of computing. Offering performance enhancements and cost efficiencies superior by an order of magnitude to conventional mainframe-centered solutions. Designed to help your organization respond quickly to the challenges and opportunities of increasingly competitive world markets.



The NCR System 3000 Family is the most complete end-to-end open systems offering in the world.



No one is delivering more complete, and powerful, open systems solutions. A new generation of mobile computers with advanced networking built in. Pen-based systems.

A full line of personal computers. Massively-parallel enterprise servers far surpassing traditional mainframes in power. NCR COOPERATION®—an innovative suite of enterprise integration software designed to help you re-engineer your business processes for greater efficiency. And the



Our Open Networking Environment includes the most advanced networking and network management products available.

world's most comprehensive set of networking and connectivity products.

And that's just for starters. Our access to the world-famous R&D facilities of AT&T Bell Labs and the advanced parallel-processing technology of our Teradata organization will ensure that we maintain the lead in open enterprise computing solutions.

We have the people, the products, and the financial stability to provide you with powerful, cost-effective computing solutions worldwide. We're putting it all together for a growing number of forward-thinking organizations. We can do the same for you.

For a free brochure—"How To Build Truly Open, Enterprise-Wide Computing," phone 1-800-CALL NCR.



NCR COOPERATION is fast becoming the leading choice in enterprise integration software.



An AT&T Company

**Open, Cooperative Computing.
The Strategy For Managing Change.**

CUSTOMERS RATE CABLETRON NUMBER 1 IN SUPPORT

At Cabletron Systems, we don't just sell networking solutions, we forge partnerships with our customers. We work with you before, during and after the sale, helping you install and configure new equipment, train your people, and develop solutions as your network—and networking needs—continue to expand.

We have the technology to get your network up and running as efficiently and economically as possible. And we'll keep it running with the largest, most dedicated technical support staff in the industry.

Two out of five Cabletron employees are dedicated solely to customer service and support. 98.6% of all technical service calls are resolved on the first incoming call—a statistic unmatched in the industry.

On the phone, on the road, on-site, we're there, supporting our systems twenty-four hours a day, seven days a week.

To learn more about Cabletron's *Complete Networking Solution*,™ give us a call at (603) 332-9400, Ext. 2704.

"Whether answering a simple product application question or solving a complex networking problem, Cabletron has always provided timely technical support. It is this high degree of support that has led to our continued use of Cabletron products."

John Finner
Data Communications
Supervisor
IAS Network Design Group
Lockheed Sanders



"If we have a problem, we need answers immediately from someone committed to providing us with the networking services and support we need. Cabletron has provided a single-source solution, including everything from products to service."

Deborah Brock
Manager, PC and
Network Services
Raymond James
& Associates



"We had some questions about our network, so I called our Cabletron salesman. A moment later I was amazed to hear Bob Levine, the president of Cabletron, on the line asking me for details on the situation. Bob promised, *and delivered*, a complete solution to the problem within 24-hours.

"I might have expected that kind of service if we were a multi-million-dollar client—but we're not. It's that kind of attention to a fairly small client that helped me make the decision to stay with Cabletron for our future networking solutions."

Bruce M. Weller
Director
Computing Services
Stetson University



FORGING THE FUTURE OF NETWORKING

CORPORATE HEADQUARTERS • 35 INDUSTRIAL WAY • P.O. BOX 5005 • ROCHESTER, NEW HAMPSHIRE 03867-0505

ENTERPRISE NETWORKING

INTERNETWORKING • SERVICES • NET MANAGEMENT

COMMENTARY

Elisabeth Horwitt

APPN vs. TCP/IP



Early reports from the front indicate that IBM's APPN may well lose its battle against TCP/IP for control of corporate internetworking backbones.

"Maybe I underestimate how relentless SNA will be this decade, but we certainly see a push here for TCP/IP with the emergence of new applications in the Unix world," says Pat Mayer, a LAN administrator at Mortgage Guaranty Insurance Corp.

Initially a directory and routing architecture for peer-to-peer SNA networks, APPN is now being positioned by IBM as the industry standard for LAN-to-LAN communications. Toward this end, IBM is trying to get LAN hub, router and adapter vendors to implement APPN protocols on their own systems. IBM is also promising that APPN will be able to carry popular LAN protocols, such as TCP/IP.

Right now, users are definitely interested in meshing TCP/IP and SNA over the same communications backbone. And vendors such as router maker Cisco Systems are helping them do it. But not necessarily via APPN.

Wrong move

IBM did not help its own cause by recently telling an assembled room of LAN and SNA vendors they would have to pay a hefty license fee for APPN before developing any products — particularly products that make use of IBM's "crown jewels," the sophisticated routing and directory functions developed for the APPN Network Node protocol.

The problem is that IBM wants to have things all ways: make APPN a successful industry standard, recoup some of the money it invested in the protocol's development and retain some portion of the competitive advantage APPN's capabilities give its own products.

If IBM doesn't watch out, it will wind up with none of the above. Cisco recently took advantage of the confusion and resentment surrounding APPN to announce its own APPN alternative, Advanced Peer-to-Peer Internetworking. APPI is said to meld TCP/IP routing and transport

Continued on page 64

FTS-2000 users anxious to upgrade

ANALYSIS

BY GARY H. ANTHERS
CW STAFF

WASHINGTON, D.C. — Users of the Federal Telecommunications System-2000 (FTS-2000) seem generally satisfied with price and service, but they say the ongoing legal and public relations brouhaha among vendors and would-be vendors is inhibiting their migration to higher bandwidth and more advanced network services.

FTS-2000 contracts were awarded to AT&T and Sprint Corp. nearly four years ago for a multibillion dollar overhaul of the government's expensive, unreliable and fragmented voice and data telecommunications system (see chart).

Almost from the beginning, the program was beset by criticism — from agencies that said its mandatory-use provisions blocked their ability to choose the best solutions; from Con-

gress and government oversight bodies that said prices were too high; and from wanna-be FTS-2000 vendors that attacked the program on nearly every front.

The latest flare-up was sparked by MCI Communications Corp. and WilTel, which have challenged in court the government's attempts to move into areas that they said are not covered by the FTS-2000 contract. Instead, they said these "new services" should be put out for bid.

For example, WilTel protested AT&T's sale of T3 (45M bit/sec.) service, saying it is not legally available under FTS-2000 because it is a new technology — not an enhancement to an existing technology covered by FTS-2000, as AT&T claimed.

WilTel's protest to a government appeals board was upheld, and AT&T has sought relief in a federal court. In the meantime, the availability of T3 and the legal status of agencies already using T3 are in limbo.

Judges may ultimately side

Economical or not?

We do not believe that FTS-2000 has been a good deal for the government," asserted the General Accounting Office (GAO) in a report a year ago. The GAO said the government paid \$148 million above commercial rates for switched-voice service during a two-year period.

But the GSA, Sprint and AT&T said the GAO report and others reaching similar conclusions are flawed in various ways and, in any case, are not valid in the face of subsequent price reductions by the carriers. They also argued that they offer unique services, such as special invoicing and security guarantees, the cost of which are legitimately passed to customers.

Many users agreed. "The feeling is we're getting good prices," said James J. Flyzik, director of the Office of Telecommunications Management at the U.S. Department of the Treasury, the largest agency on the Sprint network. "It's very easy to say from point A to point B you could get a better price elsewhere. But you need to look at prices in the aggregate."

"We are actually adding services but spending less money because AT&T has lowered prices twice," said David Bittenbender, telecommunications chief at the EPA. Donald Scott, associate administrator for FTS-2000 at the GSA, said the program has saved the government \$500 million during three years. "FTS-2000 prices are comparable now to commercial rates, and in many cases, they're lower. With the new prices, they'll be substantially lower."

New prices, to be announced in about two weeks, will be based on those submitted recently by AT&T and Sprint in a process called "price redetermination/service reallocation," mandated for years four and seven of the 10-year contract.

While the contract originally said that 60% of the revenue must go to AT&T and 40% to Sprint, the GSA may now adjust that split by shifting 40% of one carrier's traffic to the other if it is cost-effective to do so.

Protests from MCI, WilTel and others "create a lot of uncertainty and a lot of problems for us," Flyzik said. But they come with a silver lining, he added: "They do put pressure on AT&T and Sprint to keep prices down."

GARY H. ANTHERS

FTS-2000 At a Glance

Service providers: AT&T and Sprint

Users: 1.5 million in 135 federal agencies

Annual revenue: \$500 million; 60% to AT&T, 40% to Sprint

Minutes of usage, switched voice and data: 300 million per month

Services: Switched voice (78%), dedicated (private-line) analog voice and digital data service (12%), compressed or wide-band videotransmission service, packet-switched service for data including electronic mail, switched data service and switched digital integrated service for voice, data and video

Reliability: Approximate percentage of calls blocked (busy): 2.5%

Trouble reports/100,000 calls: Five

Source: General Services Administration

CW Chart: Michael Siggins

with MCI and WilTel in these disputes, but users are unsympathetic.

"It seems to me a T3 is just a bigger T1," said David Bittenbender, telecommunications chief at the Environmental Protection Agency (EPA). "What's the difference if I get the whole wire [T3] or just part of the wire [T1]? I'm buying a service."

Bittenbender said he hopes FTS-2000 will be able to provide the technology needed to move the huge amounts of data used by EPA laboratories. "I'd like to see them take full advantage of the technology-refreshment clauses of the contract and start doing things like higher bandwidth and services like cell relay and frame relay," he added.

Donald Scott, associate administrator for FTS-2000 at the General Services Administration (GSA), which oversees the federal program, said every request for a new or enhanced service must meet two tests if it is to be provided through FTS-2000.

Two requirements

First, it must represent a capability needed by multiple users. The second and apparently trickier question is whether a given requested capability can be provided under FTS-2000 without the need to solicit bids from all comers.

Although Scott acknowledged that the issue is subject to legal review and interpretation, his own views were clear: "We are going to move to higher and higher speeds. T3 is just one along the way, and it's not the last one. For example, when Sonet comes along, you're going to be in the gigabit range, and I fully expect that it ought to be offered on this contract or any successor."

The GSA and users argued

that movement away from the concept of an agency having just one telecommunications vendor would delay their migration to new services because new federal procurements can take months or years to complete. They also said it would be difficult.

"You want to add another vendor for T3, one for Sonet, one for this and one for that? It becomes awfully expensive to manage," Scott said.

Herb Kuehne, acting director of the Telecommunication Policy Division at the U.S. Department

of Agriculture, said the agency needs things such as Asynchronous Transfer Mode and broadband Integrated Services Digital Network services now, but he said he is reluctant to go after them via the GSA's FTS-2000 exception process.

"That would put part of the department on FTS-2000 and part on other facilities. We want one architecture," he said.

Nevertheless, companies such as MCI argue that greater competition would lower the government's communications costs, and various studies support that contention (see story at left).

If the GSA proves unable to satisfy the needs of FTS-2000 users through existing contracts, it is partly to blame, said Joseph J. Leo, deputy administrator for management at the Food and Nutrition Service of the Agriculture Department.

According to Leo, the 1988 contracts were put together primarily for voice communications. "They never did a real good analysis of what the data side of the house needed. They'll have to do that next time. In the meantime, FTS-2000 is going to continue to fragment and fall apart."



GSA's Scott: Moving to higher speeds

Imaging system to help insurers capture faxed claims

BY ELLIS BOOKER
CW STAFF

BALTIMORE — Physicians and other medical service providers may soon be able to submit Medicare claims electronically even if they do not own a computer.

At the recent Medicare National Electronic Environment Conference here, Teknekron Communications Systems, Inc. announced a proprietary system called FaxEMC. The product is an imaging

system that allows insurers to capture and translate standard health care claims transmitted by fax.

"Our system is designed specifically for the HCFA 1500 [Medicare] claim," said Floyd Williams III, Teknekron's director of insurance technologies. He said the system uses off-the-shelf optical character recognition and other components. But some proprietary pre- and postprocessing elements are geared for increasing overall system accuracy, he said.

"We believe it takes one quarter the number of man-hours to process a claim this way compared with a paper system," Williams said. He estimated that insurers will save about 50 cents per processed claim with the system.

The first test of FaxEMC will be at Blue Cross/Blue Shield of Texas next month. Blue Cross/Blue Shield of Arkansas also plans to test the system this fall.

For several years, many hospitals and other large providers of medical services have been able to use a computer-to-computer format, the Electronic Media Claim, for transmitting claims to the insurer. Both Electronic Media Claim and a companion computer records standard were developed by the U.S. government's Health Care Financing Administration.

Teknekron's FaxEMC system differs by converting incoming fax images to computer-readable records in the government's format. A little over half of all Medicare Part B claims are submitted electronically. But only one-third of all Medicare providers are automated, leaving about 350,000 providers filing claims manually.

For instance, about half of the 25 million doctor bills Blue Cross/Blue Shield of California processes each year arrive electronically. The insurer said it hopes the fax-based system will make a 10% dent in the 45,000 to 50,000 paper documents it receives every day.

"If we can exceed that [target], we'll be thrilled," said Rick Lytle, Medicare operations manager at Blue Cross/Blue Shield of California.

What are VSAT users saying about AT&T Tridom?



At AT&T Tridom, there is nothing more important than standing by our customers — and it shows.

It shows in the 1992 I/S Brand Preference survey on wide area networks conducted by Computerworld where AT&T Tridom swept five categories including Best Technology, Best Price/Performance, Best Service/Support, Best Documentation, and Prefer to Do Business With.

It shows in the 1992 Users' Choice survey conducted by Data Communications in which AT&T Tridom was voted the Best Overall VSAT Vendor with the Best Technology.

And it shows by what industry analysts are saying. A recent Yankee Group report lauded AT&T Tridom's shared hub service capability, technical superiority, and facility for combining VSAT technology with terrestrial data services.

These achievements have occurred for one simple reason: *We make it our business to be totally responsive to our customers' networking needs.*

Give us a call. 800-346-1174
404-426-4261, FAX: 404-514-1737



Horwitt

CONTINUED FROM PAGE 63

protocols with Cisco's own directory and SNA routing functions, enabling users to interconnect both TCP/IP and SNA devices over the same backbone.

The attraction for users is that they can use their existing TCP/IP links and don't have to implement a new, complex protocol — APPN; the attraction for vendors is that, unlike IBM, Cisco is making APPN available free of charge.

IBM is also hurting its own cause by making the 3745 front end a keystone of its APPN architecture. The idea is that IBM shops already have their LANs linked to their IBM hosts via 3745s, so why not use a 3745-based APPN backbone to link the LANs to one another?

The problem, as users have found, is that the 3745 was never designed as a LAN interconnectivity device. IBM is putting a lot of effort and R&D money into solving that problem. Last week, it announced frame-relay switching and more efficient LAN connections for the 3745.

However, users may see this as Band-Aid stuff; the real question is whether they will want to continue to route their LAN connections through centralized front ends when they can just as easily interconnect LAN routers directly, according to Doug Underhill, an assistant vice president at CSX Corp.

IBM's 3745 push has more behind it than just keeping an expensive piece of hardware on the market. Behind it is IBM's central strategy of how to keep its customers as they move increasingly down to LANs and Unix systems.

IBM's dilemma is that it would like customers to stay on its mainframes as long as possible; yet if IBM does not serve their LAN needs, it will lose them entirely when they finally do move off mainframes.

One wild card is APPN+, the next generation of APPN, which promises to allow TCP/IP, IPX and OSI — as well as SNA — to realize the full bandwidth of fast-packet connections.

In addition, other wild cards are the so-called Paris and Planet switches, IBM's next generation of communications processors.

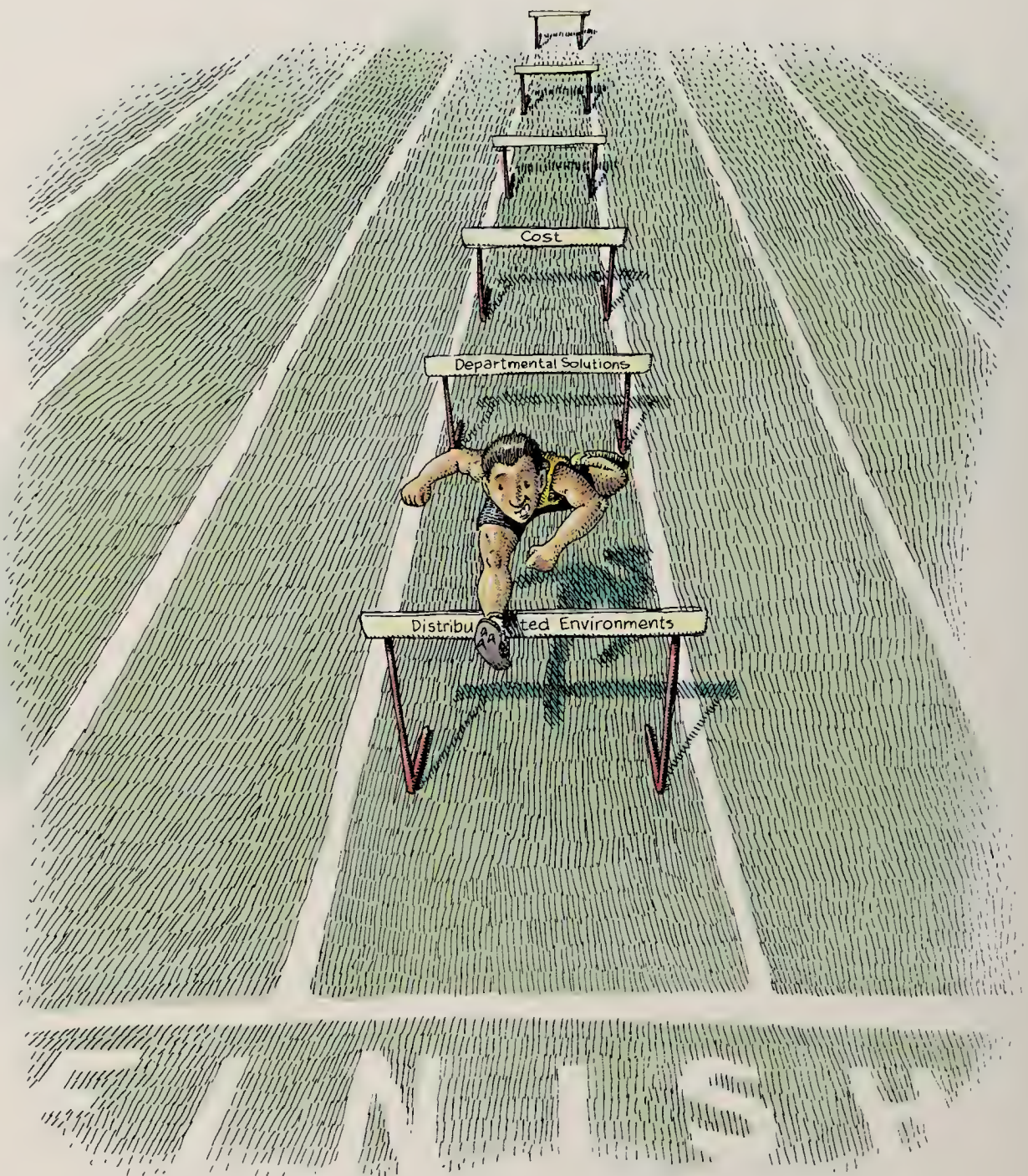
The big question is whether IBM can modernize its enterprise connectivity blueprint to meet users' peer-to-peer networking needs. Right now, it seems likely that leading-edge companies will not wait that long.

Horwitt is a Computerworld senior editor, networking.

Are there hurdles between you and client/server applications?



Take them
in stride with our
client/server
seminar!



The race to stay on top is grueling for those who are trying to find the right answers to fast, easy and powerful client/server application development.

To help get you ready, Andersen Consulting invites you to spend a morning at one of our Client/Server Seminars.

Aaron Zornes, a leading industry analyst from the **Meta Group**, will describe how client/server technologies are impacting today's MIS organizations. These insights may help you to better anticipate some of the hurdles you've thought about, as well as some unknown challenges ahead.

You'll hear firsthand reports from representatives of major corporations who have gone the distance, such as **Caterpillar**, **BC Gas** and **Sprint**. They'll explain how they evaluated the many market options available in

order to select specific tools and technologies.

You'll see firsthand how client/server application development tools can improve your overall productivity today. And you'll find out what to look for in your application development tools to satisfy the needs of your client/server environment tomorrow.

Be a winner in the competitive race. Act now to secure a place in this important seminar. Just fill out and mail the attached card or call us at 1-800-458-8851. Or, fax your reservation to 1-312-507-0727.

The seminar is complimentary. The information is priceless. Hurry!

**ANDERSEN
CONSULTING**
Software Products

ADIN01



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 43 CHICAGO, IL

POSTAGE WILL BE PAID BY ADDRESSEE

JENNIFER G BURROWES
ANDERSEN CONSULTING
69 W WASHINGTON ST
CHICAGO IL 60602-9760

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Check this list for the FOUNDATION® seminar time and location that's most convenient for you. Then be sure to reserve a spot for yourself by sending in the postage-paid card at the bottom of this page, or by calling us at 1-800-458-8851. You can also fax us your reservation at 1-312-507-0727.

Date	City
October 14, 1992	Detroit
October 15, 1992	Minneapolis
October 20, 1992	Boston
October 21, 1992	New York
October 22, 1992	Philadelphia
October 27, 1992	Cleveland
October 28, 1992	Washington, DC
October 29, 1992	Orlando Milwaukee
November 10, 1992	Houston Phoenix
November 12, 1992	Dallas
November 17, 1992	Chicago Toronto
November 18, 1992	Atlanta
November 19, 1992	Raleigh Ottawa
November 25, 1992	Montreal
December 1, 1992	Denver Nashville
December 2, 1992	Vancouver
December 3, 1992	San Francisco

FOUNDATION®

☐ **Yes! I would like to attend.
Please save a place for me at your
Client/Server Seminar.**

Date _____ Location _____
 Name _____
 Title _____
 Organization _____
 Address _____
 City _____ State _____ ZIP _____
 Phone (____) _____

Others from my organization who will attend
(name and title):

☐ **No, I cannot attend, but would
like more information about:**

___ Customer successes with client/server
 ___ How to get started with client/server
 ___ Other _____

X Window simplifies net management

BY JOANIE M. WEXLER
CW STAFF

Eliminating the common "swivel chair" syndrome of network management is an emerging use of X Window System technology. The X protocol allows users to tap into multiple networked hosts from one terminal and establish simultaneous windowed sessions.

US West NewVector Group, Inc. in Bellevue, Wash., for example, is using about 60 Applied Digital Systems, Inc. X terminals — including a new product family announced last month — to monitor its many diverse cellular telephone switches in its Minneapolis-to-Seattle cellular customer network.

"The X terminal is basically a resource-saver. We've replaced four to six PCs or terminals with one X terminal on each network manager's desktop," said Bill Holt, manager of production open systems administration at the cellular paging subsidiary of US West.

In an effort to resuscitate its 2% market share in the highly combative X market, NCR Corp.-owned Applied Digital recently replaced its entire line of X terminals with reduced instruction set

computing-based products. The company swapped in a line of 25-MHz Intel Corp. I960-based displays sporting performance, price and graphics resolution more in tune with the tastes of commercial users, explained Jack E. Denenberg, an NCR/Applied Digital product manager.

US West's NewVector division has had the new \$2,595 to \$5,895 "Viper" products in alpha testing

The other vendors' terminals are used in other departments of the company, Holt said.

However, Holt has not had a chance to judge the user-friendly components of the new NCR/Applied Digital line — such as special installation software — that are supposed to allow me to put X stations in the hands of those who are not technically competent." Those features were not included in the alpha-test version, he explained.

"Right now, with anyone's products, you have to be a basic technician" to use X, he said. He added that NCR/Applied Digital is fixing a monitor problem that produces a "wavy effect."

NCR/Applied Digital's new line replaces a family of monochrome X displays based on the Motorola, Inc. 68020 chip and color displays running on both the 68020 and Texas Instruments, Inc.'s 34020 processor. However,

the vendor said it will continue to service the old line for seven years.

Into the mainstream

Generally, diskless X stations are stretching beyond the engineering community in firms imple-

menting distributed processing that are seeking ways to give users access to multiple computing environments.

Commercial sites considering investments in X terminals are often seeking user-friendly, security-oriented setups that cost less than workstations but have stronger graphics capabilities than personal computers.

Last month, for example, Federal Express Corp. signed a deal worth up to \$15 million with 41% market share player Network Computing Devices for X terminals to manage corporate operations.

The firm chose X terminals rather than investing in a workstation or PC for every desktop because "we're trying to achieve windowing and graphics, not a full operating system running applications," said Dennis H. Jones, senior vice president of the company's information and telecommunications division.

According to a survey of 141 X user sites reported in *Reliability Ratings*, a Boston-based research report, 17% bought X terminals for their price/cost-effectiveness over other platforms. However, more than 23% of the respondents said they are using X terminals today for programming, while just 4% said they are using them for general business, according to the study, which was published last month.



3533 X stations are built around Intel's I960 RISC-based CPUs

for about three weeks. So far, the test has shown "very positive performance improvements" over both NCR/Applied Digital's older terminals and those from Network Computing Devices, Inc. in Mountain View, Calif., and Tektronix, Inc. in Wilsonville, Ore.

NEW PRODUCTS

WAN software

AT&T has introduced Definity High Speed Link, a data module.

The product provides dial-up access to data communications services operating at speeds of 56K and 64K bit/sec., the company reported.

A link is provided between any AT&T digital private branch exchange and high-speed data network services such as the company's Accunet Switched Digital Services and Software Defined Data Network services.

Definity High Speed Link allows users to use existing T.1.5 facilities for dial-up transmission and offers advanced capabilities such as built-in remote maintenance.

The unit costs \$2,200.
AT&T
Room 23A25
55 Corporate Drive
Bridgewater, N.J. 08807
(908) 658-2604

Gateways, bridges, routers

Wall Data, Inc. has started shipping Rumba for NetWare.

According to the company, the product is the only Microsoft Corp. Windows workstation con-

nectivity solution designed to operate simultaneously under Novell, Inc.'s NetWare for SAA, NetWare SNA Gateway and Transmission Control Protocol/Internet Protocol (TCP/IP) environments.

Without having to upgrade their Novell networks or replace their NetWare SNA Gateways, Windows users can access mainframe data.

Support for TN 3270 communications via TCP/IP and Rumba remote is provided, offering PC-to-host connectivity for laptops and other personal computers for which dial-up communications are necessary.

License fees begin at \$395.

Wall Data
17769 Northeast 78th Place
Redmond, Wash. 98052
(206) 883-4777

Micom Communications Corp. has introduced an internal remote local-area network bridge option for the Micom Marathon Data/Voice Network Server.

According to the company, the bridge option eliminates the need for an external Ethernet bridge when sending data and voice to remote locations.

The option was designed for Marathon 1K and 5K and offers

the functions of an 802.3 Ethernet LAN bridge on a single module, the company said.

Plugging directly into Marathon, the option can run on any Ethernet protocol and permits users to integrate voice, data and fax with local- and wide-area network traffic over a low-speed leased line.

The LAN bridge option costs \$1,750.

Micom Communications
4100 Los Angeles Ave.
Simi Valley, Calif. 93063
(805) 583-8600

X Window System

Quality Software Products Co. has ported Masterplan 1.1X, a CRT project management program, to the X Window System as a Motif-compliant application.

Up to 9,999 activities can be handled by Masterplan, which uses a four-screen approach that allows users to track all project phases.

Masterplan has a resource screen that monitors resources and a calendar screen that displays a project calendar. Masterplan's network screen is a graphical way to see past and present activities.

The product is available for Unix workstations running X Version 11 Release 3 or later or

Unix host computers connected to X client workstations for terminals.

Licenses start at \$695.
Quality Software Products
5711 West Slauson Ave.
Culver City, Calif. 90230
(310) 410-0303

Links

Madge Networks, Inc. has introduced the Smart 16/4 MC32 Ringnode, a Token Ring adapter card.

The Smart 16/4 MC32 Ringnode gives users full 32-bit functionality and bandwidth of Micro Channel, and it has been optimized for the IBM Personal System/2 Model 95XP 486 server.

According to the company, the product is the first adapter card to support Micro Channel's bus-master streaming data mode.

The card is optimized to provide throughput in gateways, servers and critical network stations and supports shielded twisted-pair, unshielded twisted-pair and remote booting, the company said.

The Smart 16/4 MC32 Ringnode costs \$1,295 or \$1,195 for a five-pack quantity.
Madge Networks
42 Airport Pkwy.
San Jose, Calif. 95110
(408) 441-1300

IN BRIEF

New Remote2 from DCA

■ **Digital Communications Associates, Inc.** in Alpharetta, Ga., has announced a new version of its Remote2 asynchronous remote control communications software. The new release adds Lotus Development Corp./Intel Corp./Microsoft Corp. extended memory support.

Other enhancements include new security features for the host personal computer and reduced conventional random-access memory requirements in the host PC.

■ Long-distance carriers **Witel, Sprint Corp.** and **CompuServe, Inc.** have announced that Dowty Communications' Frame Relay Access Device has met tests for compliance with their frame-relay services. **Northern Telecom, Inc.** also announced that its frame-relay switches are compliant with Dowty devices.

■ **Beame & Whiteside Software Ltd.** has developed what is said to be the industry's smallest Simple Network Management Protocol kernel. The kernel, which is said to consume less than 2K bytes of workstation memory, will be integrated into Version 3.0 of BW-TCP and BW-NFS Transmission Control Protocol/Internet Protocol client software for DOS and Microsoft's Windows.

The software is said to be fully compliant with the Management Information Base II version of the network management standard.

■ **Telepartner International, Inc.** in Farmington, Conn., said it is now shipping Packet/3270 for Windows, a Windows 3270 emulator for portable and stand-alone PCs dialing into Systems Network Architecture mainframes.

■ **Pacific Bell** recently announced plans to replace older telecommunications switching systems throughout California's North Coast region with digital technology based on Northern Telecom DMS 100 switches.



Build strong networks eight ways.

Today, no company can afford networks that fail. Here's Chipcom's recipe for healthy networks that keep running.

1. Automatic self healing. With Chipcom's ONline™ System Concentrator, networks can automatically reconfigure themselves around faults. And keep running, without users even being aware a problem exists.

2. Port-switching flexibility. When performance slows, or a segment stops, you can simply switch users from the offending network to a backup.

3. "No sweat" hot swaps. Virtually any element of the network, including power supplies, repeaters, MAUs, terminal servers, bridges and routers, can be replaced

as needed without disturbing network users.

4. Built-in redundant power supplies, including dual power cords for no-interruption service.

5. Cable/link redundancy when and where you need it, regardless of the media you're using: Fiber, shielded or unshielded twisted pair, co-ax, or any combination.

6. Fault-tolerant bridging, too. Chipcom offers fault-tolerant bridge modules capable of accommodating link failures.

7. Network Control System software. Software that lets you perform an autopsy after the network dies isn't much help. Our NCS software is designed to help your network self-heal, so the network stays up until—and while—you repair the fault.

8. Not even the CFO can fault it.

Because with Chipcom, you leverage your network investment. You slash the cost of network downtime and maintenance. And you build a network that neither technology nor your company's growth will obsolete.

And those are pretty strong arguments. No matter how you slice it.

**NETWORK
RELIABILITY**

**LEARN HOW
TO BUILD A
STRONGER
NETWORK.**

Avoid the major causes
of network failure.

For your free copy, call:
1-800-228-9930.



CHIPCOM™

ONline is a trademark of Chipcom Corporation.

© 1992 Chipcom Corporation, Southborough Office Park, 118 Turnpike Road, Southborough, MA 01772

LARGE SYSTEMS

HARDWARE • SOFTWARE • STRATEGIES

Rdb tool promises better performance

DBTune customizes design based on actual use

BY MELINDA-CAROL BALLOU
CW STAFF

RICHMOND, Va. — Information Systems Group, Inc. plans to begin shipping Version 2.0 of DBTune next month. The tool for Digital Equipment Corp.'s Rdb relational database management system improves database performance by using workload, volume and environment information to create a physical database design tailored to actual database use, officials said.

The new version of the product incorporates dynamic transaction analysis, which generates optimized Rdb designs.

"Version 2.0 is geared toward getting tuning and productivity results with as little effort from the database administrator as possible," said Tom Bandy, company president. "They can also now control tuning at the component levels of the Rdb database."

Suitable bridge

Information Systems Group and Compu-Design USA worked together to produce a bridge between DBTune and Compu-Design's RPM/V, a tool that detects and profiles application performance. The use of this bridge allows DBTune to make its design decisions based on the more complete information available from RPM/V, company officials said.

"The RPM tool monitors the activity of the database, and we then include that data with our performance analysis," Bandy said.

"It gives the [database administrator] complete control over tuning the database by going in and doing analysis — and it does the work for you. You just punch a key and let it rip," said John Byerly, vice president of MIS at Clinical Reference Laboratory, Inc., a testing laboratory in Kansas City, Kan., that uses a range of Rdb databases for pharmaceutical and blood testing.

The lab, which has seven databases, experienced a 15% to 55% performance gain after using DBTune, depending on how the database was tuned and optimized, Byerly said.

"The dynamic transaction analysis with this new version will let DBTune go out, analyze your database, make suggestions, tune the database, figure out its depth and set up indices for you," Byerly said. "Whenever you use it on a database that's new and has never been tuned, the performance results are tremendous. I haven't had to hire a [database administrator], which has been a tremendous saving."

Version 2.0 of DBTune and the bridge to RPM/V are due to ship Oct. 1. Prices for DBTune range from \$4,975 to \$9,945, based on the number of users. The bridge is \$2,000.

Management by comparison

Data center managers try metric services to measure their efficiency

BY JOHANNA AMBROSIO
CW STAFF

Mom may have told you not to compare yourself with others, but information systems executives have found it a helpful method for pinpointing the inefficiencies in their data center operations.

The two primary vendors of services that compare like-size data centers are Compass America, Inc. and Real Decisions Corp.

Although their approaches differ somewhat, both vendors use metrics to measure various aspects of the data center, including personnel, systems efficiency and what is spent on equipment.

One recent Compass customer was Champion International in Hamilton, Ohio, which undertook a comparative study in January. "Altogether, we identified savings that represent about 3% of the total IS budget," said Tom Walsh, director of MIS network services. "The study more than paid for itself."

Although Champion had 21% fewer IS staffers than even the top-performing companies in the Compass database, the study identified four positions that could be eliminated, Walsh said. Another pinpointed area involved accessing information online instead of printing everything out.

Walsh said another benefit was less bottom-line oriented. "It validated that we are performing well compared to other world-class organizations. That has a positive effect on morale, and that's important because for the past five years, we've been

ing studied. Whereas Real Decisions compares it with similar-size data centers in the same industry category in the U.S., Compass uses a database that contains the Top 10 performing data centers worldwide that are similar in size to the data center being studied. These Top 10 performers are garnered from different industries.

Another major difference is that Real Decisions focuses on chargeback costs — that is, what the data center should be charging for its services — while Compass analyzes the unit costs of many different data center categories.

The unit costs are absolute costs divided by quantities of service provided. Unit costs

vary depending on how much work is being processed at any given time.

The Real Decisions study is less detailed and less expensive than the Compass version. On the other hand, the Compass service requires far more work on behalf of the user to collect and categorize the data that Compass then analyzes.

Some of the data collection — up to 900 pieces of it, depending on the installation — is done with proprietary Compass software that resides on the mainframe and scans logs and other software. But some of the data

Continued on page 70

What the metrics mavens do

The two major data center metrics services are Real Decisions in Darien, Conn., and Compass America in Herndon, Va. Both measure various aspects of data center operations to determine what they cost or how they should be charged back, and how efficient they are compared with data centers of similar size.

How they differ

Compass' evaluation is more in depth than Real Decisions', users said, and thus costs more: \$28,000 to \$100,000, vs. Real Decisions' \$25,000 to \$45,000.

asking people to do a lot."

Another Compass customer is Johns Hopkins Health System in Baltimore. Although that study has not quite paid for itself in real bottom-line benefits yet, service has improved, said Jake Jacobstein, director of operations and technical support.

"We've implemented a few of the recommendations, including some hints about how to make non-IBM printers perform well on an IBM network," he said. "It was a real eye-opener for us."

One of the major differences between Compass and Real Decisions is the basis of comparison they use for the data center be-

E-Mail = Emc²/TAO LAN

You've known Emc²/TAO for the mainframe for years — and now it's available for the LAN. Emc²/TAO LAN offers the same features and functions as Emc²/TAO on the mainframe — but with the sizzle of Windows on the desktop.

Emc²/TAO LAN is very well connected. It's the only LAN E-mail product offering totally seamless integration with its mainframe counterpart. That means central directory administration, centralized gateways, and scalability. In short — a comprehensive enterprise solution.



4073 Merchantile Avenue, Naples, FL 33942
(813)643-1500

Emc²/TAO

For your free copy of The
GARTNER GROUP's Research Note
on Emc²/TAO, call toll free

1-800-237-4510

OFFICE
INFORMATION
SYSTEMS

the
GARTNER
GROUP



HEY...
DID YOU EVER GET
MY MEMO?

WordPerfect® answers the most-asked question about electronic mail.

Click on "Send" in many of today's e-mail packages, and the urgent message on your screen will disappear, perhaps never to be heard of again.

You'll have no way of learning if it was ever delivered, or opened. You'll have no way of checking what you sent to whom, or when. And if you ever need to retract a message for corrections, well, *no way*.

So it's no wonder that in surveys of the features users would most like to see incorporated into their e-mail packages, message tracking ranks at or near the top. Except, that is, in surveys of WordPerfect® Office users.

An In Box Is Not Enough

In addition to the In Box that every e-mail package offers, WordPerfect Office gives you an electronic Out Box. So in addition to all the usual things you'll be able to do with your incoming mail (including read, reply, forward, save and print), we give you unusual control over your *outgoing* messages as well (including the ability to reread, rethink, rewrite and retract).

And the Out Box is just one of the features that separates WordPerfect Office from the rest of the e-mail pack.

E-Mail Everyone Can Agree On

If people would simply agree on a single computer platform, hooking everyone up with an e-mail system would be no trick. But since *that* shows no signs of happening, WordPerfect

Office is available for all of the most popular platforms, including DOS, Windows, Mac, UNIX, VAX and Data General.

With WordPerfect Connections (included in Office 3.1), a DOS and Windows LAN can connect seamlessly (and transparently) with VAX and UNIX LANs, for example. So a message that goes out in Windows can arrive in UNIX and lose nothing in the translation.

Getting Your Message Out

Far-flung empires will find WordPerfect Office equally accommodating, with gateways to messaging systems that include Novell MHS, IBM OfficeVision, DEC, X.400, SMTP, MCI Mail and AT&T EasyLink, among others.

And unlike e-mail packages that simply deliver the mail, WordPerfect Office includes powerful Calendar and Scheduling functions that provide entirely new ways for your people to work together productively.

Let Us Show You How It Works

With WordPerfect Office, the possibilities are nearly limitless. And the technical support for users and administrators is widely acknowledged to be the best in the business. To learn more, contact your WordPerfect Representative, or for a free video demonstration, call (800) 526-5064.

(Until you have a more effective means of business communication up and running, the telephone will have to do.)

WordPerfect®

WORDPERFECT IS A REGISTERED TRADEMARK AND WORDPERFECT OFFICE IS A TRADEMARK OF WORDPERFECT CORPORATION WITHIN THE UNITED STATES AND OTHER COUNTRIES. ALL OTHER BRANDS AND PRODUCT NAMES ARE TRADEMARKS OR REGISTERED TRADEMARKS OF THEIR RESPECTIVE COMPANIES. ©WORDPERFECT CORPORATION 1992

HP users unhappy with MPE patches

BY MARK HALPER
CW STAFF

While many users of Hewlett-Packard Co.'s HP 3000 minicomputer remain loyal to the machine's MPE proprietary operating system and anxiously await the Unix hooks HP has promised, they do have a beef with MPE patch procedures.

Users complain that patching MPE requires too much downtime for the computer and the network, and that HP issues patches that often introduce new problems while correcting existing ones.

The downtime problem is most severe

when users install a whole new operating system, users said.

"It can take three hours, and that's being kind," said Guy Smith, HP 3000 systems manager at Circuit City Stores, Inc. The Richmond, Va.-based electronics retailer operates five HP 3000s.

"Most of HP's customers have such real-time requirements that having to shut down for an hour in this day and age of automation can be big bucks," noted Steve Cole, manager of HP Technical Service at Northern Telecom, Inc. in Research Triangle Park, N.C.

When the user has to patch MPE's op-

tional Network Services module, that means bringing down the network, which most users would rather avoid.

"You live by the networking sword and you die by it," Smith noted. Circuit City networks its 3000s through 250 sites around the country.

Further complicating Network Services patches is the complexity of Network Services itself, Smith noted.

"I would be hard-pressed to train my third-shift operators on how to do an NS patch," Smith said. He noted that while the company tends to implement NS changes overnight when traffic is slow, it

has to bring in specialists during off hours.

Cole added that problems patching MPE go beyond downtime.

"The biggest problem is when you receive a patch, you don't just receive one. Applying a patch to fix a specific problem may affect as many as 30 or 40 other modules, and that can create a problem," Cole said.

Cole and Smith said they and other users have voiced their concerns to HP, which they said is working on correcting the problem.

HP last week said it has a twofold plan to address users' MPE patch complaints.

Korak Mitra, marketing manager for product planning, said the company plans to release upgrades to MPE less frequently to avoid confusion over which patches relate to which upgrades. The company has typically issued about four modifications per year; it will now release only one or two while planning major updates every 12 to 18 months, he said.

The major release schedule marks a new model for updates, replacing the frequent release of lesser updates. The old model resulted in users mismatching patches with their particular version of MPE, Mitra said.

Mitra also said HP is working on developing patches that are simpler to install and require less downtime.

Management by comparison

CONTINUED FROM PAGE 67

must be collected manually by IS staffers, and users who have done it say it is almost always more involved and time-consuming than it may first appear.

"We didn't prepare everything exactly on target," Jacobstein admitted. "But we've started collecting some historical data so we'll have it for the next time we do the study," which is planned for February or March. Walsh, who is planning for another study in about a year, said, "The second time should be a lot simpler."

Compass has about 300 customers; Real Decisions has about 250. Some clients use both services — Real Decisions to get an efficiency ranking within their industry and Compass to find out where they stand worldwide. A few years back, Ralston-Purina Co. used both to revamp its IS operations.

Some computer vendors and consulting organizations offer these services, but not all metrics mavens are created equal. "IBM came in about a year ago to do this kind of study," Walsh said. "They had some knowledgeable people, but they weren't able to come up with implementable ideas. They just told me what I was doing, and I already knew that."

Don't Jump!

You DO have a choice!

Now you can purchase top quality memory upgrades for your mainframe without taking the "big leap." Why purchase a new machine or costly IBM memory when there is a high quality, third party alternative?

If your 3090 or ES/9000 is approaching overload, don't make a move until you have considered one of the superior storage solutions from BSM.

BSM products let you get more life out of the system you have already invested in. Our memory is manufactured with only the best American components made. This plus decades of engineering experience with IBM water-cooled CPUs combine to deliver superior, field-proven products. Best of all, they are available to you at a realistic price.

So, don't jump... not until you have looked at BSM memory upgrades for your main and expanded storage requirements.

BSM, The Memory People.

1-800-899-4BSM

IBM System/3090 and ES/9000 are trademarks of International Business Machines, Inc.

"The Memory People" is a trademark of BSM Corporation.

BSM
CORPORATION



ATTENTION CONSULTANTS!

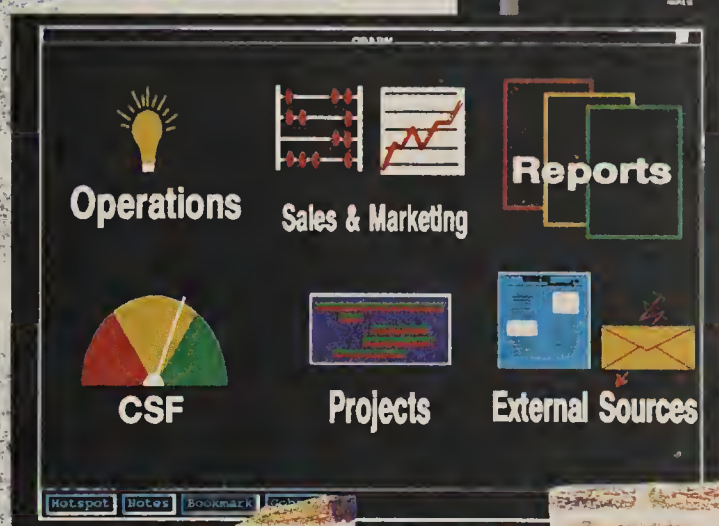
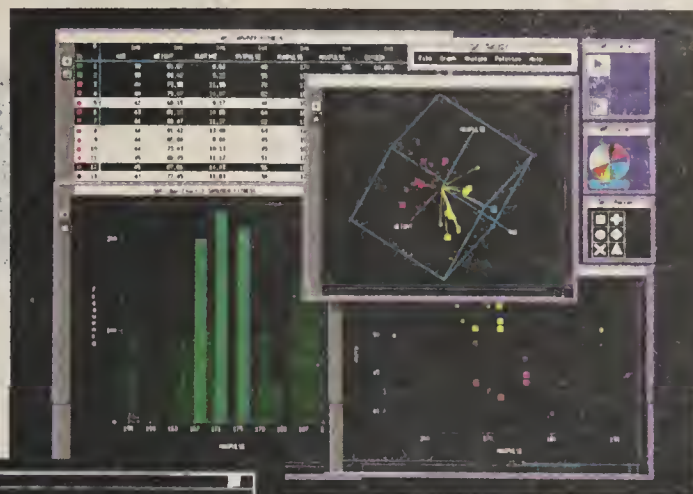
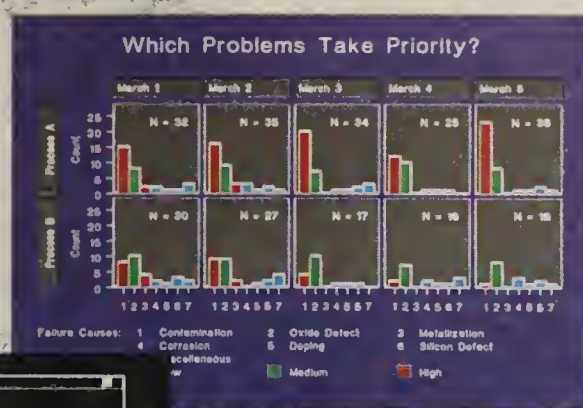
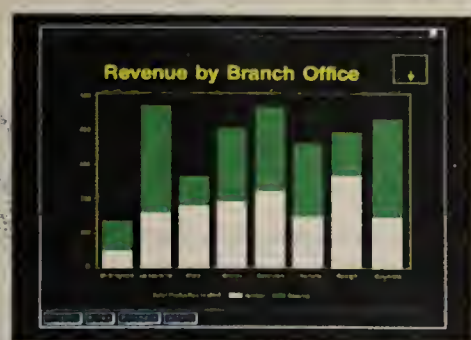
Increase your sales!

Advertise in
Computerworld's annual
Consultants Directory for
just \$399.

Appears in our Annual Forecast
issue on Jan 4.
Ad Close: Dec 7

800-343-6474

x744



Break Down the Barriers Between People and the Information They Need

**With the SAS® System —
The World's Leading Information Delivery System.**

A lot of obstacles stand between your organization's two most important assets: *people* and the *information* they need to make better decisions. With the SAS System, you can deliver the right information to the right people at the right time. Every time. And you can break down all the barriers created by...

Diverse Data Sources

The SAS System turns your organization's "islands of information" into generalized resources available to any user or application—no matter where or how data are stored, from popular databases to remote external files.

Diverse Applications

The applications that drive your enterprise are fully integrated in the SAS System—everything from EIS and decision support to financial analysis and reporting to quality management. This comprehensive approach eliminates the need for single-shot software solutions that have made a patchwork quilt of your applications strategy.

Diverse Client Needs

The specific needs and experience level of every client—from new computer users to seasoned pros—are met through personalized interfaces. Take advantage of icon-based executive information systems, point-and-click

menus for business analysts, an object-oriented applications development environment, or a full-screen display environment just for programmers.

Diverse Computing Platforms

The SAS System maximizes the effective use of your entire computing mix—from PCs and workstations to minicomputers and mainframes. You'll have true hardware independence—without sacrificing your ability to exploit the particular advantages of specific environments. Plus the ability to implement cooperative processing by segmenting applications any way you choose.

For your free video introduction to the SAS System, give your Software Sales Account Manager a call today at 919-677-8200. Also ask for details about the free SAS System Executive Briefing—coming soon in your area.



SAS Institute Inc.
Software Sales Division
SAS Campus Drive ☐ Cary, NC 27513
Phone 919-677-8200 ☐ Fax 919-677-8123

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1992 by SAS Institute Inc. Printed in the USA.

IN BRIEF

Covia signs with Fujitsu-ICL

■ **Covia Corp.**, the marketer and developer of the Apollo computer airlines reservation system, has signed a \$17 million contract with **Fujitsu-ICL Systems, Inc.** to purchase 5,000 of Fujitsu-ICL's Automated Ticket and Boarding Pass Printers during a three-year period. A possible two-year extension for additional printers could potentially expand the value of the contract to \$50 million.

■ **Digital Equipment Corp.** is winning accolades from the Profit Oriented Systems Planning Program (POSPP), an organization of information technology executives from large companies, for bringing personal computer-style pricing to the midrange market and "breaking the link between hardware and software," POSPP officials said.

DEC will be the first member of POSPP's newly established Vendor Honor Roll. It is being recognized for shifting its licensing practices last October to offer personal-use licensing and concurrent-use licensing options in response to user complaints.

■ **NCR Corp. and Independence Technologies, Inc.** have made available NCR's Top End transaction-processing monitor on the HP 9000 computing system. The port will be available worldwide later this month.

■ **Independent Computer Consulting Services, Inc.** in Columbus, Ohio, is integrating its accounting and distribution applications with Cincom Systems, Inc.'s Supra database management system and Mantis fourth-generation language.

Unify to support Tuxedo TP, Windows

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — Unify Corp. is pushing its Accell/SQL database-independent tool kit for Unix relational databases into a broader client/server user base.

The \$40 million firm announced it will support AT&T's Tuxedo transaction manager to reach networked database servers and Microsoft Corp.'s Windows to reach more desktop users. At the same time, it announced a marketing relationship with the British firm ICL PLC, which will resell the Accell/SQL 2.0 tool kit worldwide as ICL's Open Systems 4GL.

Unify's two new products, Accell/TP for transaction-processing applications and Accell/SQL for Windows, will go into beta-test sites this fall, said Nico Nierenberg, company president. The Windows version is scheduled to be delivered by February, while the Tuxedo-compatible

transaction-processing monitor is due to ship in April. Pricing was not announced.

The Accell/SQL for Windows applications will run against relational database management system servers from Oracle

THE PRODUCTS bolster Unify's claims that it can provide independent application tool kits that work with a wide variety of back-end database servers.

Corp., Sybase, Inc., Informix Software, Inc., the Ask Co.'s Ingres Corp. and Unify. Users will access those servers from both Windows personal computers and Unix workstations. Accell/TP will work

with the same back-end database servers, accessed by character-based terminals or client machines running the Open Software Foundation's Motif or Sun Microsystems, Inc.'s Open Look graphical user interfaces.

Industry analysts said the products bolster Unify's claims that it can provide independent application tool kits that work with a wide variety of back-end database servers. However, Unify Chief Executive Officer James Hammock noted that 70% of all Accell/SQL users also own the Unify 2000 relational database.

Some analysts question Unify's ability to sell into other database vendors' installed bases two years after moving to a tools strategy. "Their product direction seems relatively sound," said Darlene Brown, a software analyst at Gartner Group, Inc. in Stamford, Conn., "but they're still trying to move away from being a database company."

NEW PRODUCTS

Unix

Alliance Technologies, Inc. has introduced TextMachine, a Unix, full-text, distributed, textual database product.

According to the company, the product is a suite of tools designed for client/server architectures. Users can construct systems to prepare, load, access, collect, monitor and manage distributed databases.

TextMachine offers a variety of capabilities such as searching for text attributes when the exact text is unknown, performing user-transparent global searches across multiple platforms and browsing through documents based on a user-defined document structure.

TextMachine prices range from \$50,000 to \$300,000.

Alliance Technologies
Suite 250
Shepard Mountain Plaza
6034 West Courtyard Drive
Austin, Texas 78730
(512) 794-9856

Data storage

Contemporary Cybernetics Group has introduced the CY-2000, a magneto-optical disk drive.

The product stores 1G byte on a single disk and is fully compatible with all NCR Corp. computer systems. CY-2000 can be used for multimedia and digital video, desktop publishing and computer-aided design and manufacturing.

The CY-2000 fits into most environments because its dimensions and mounting provisions are identical to standard 5¼-in. floppy disk drives. The optical discs can be erased and rewritten continuously without loss of reliability, the company reported.

Prices start at \$3,500.

Contemporary Cybernetics
Rock Landing Corporate Center
11846 Rock Landing
Newport News, Va. 23606
(804) 873-9000

Database management

Object Design, Inc. has introduced ObjectStore, an object-oriented database management system.

Object technology serves as a solution for working with complex information such as images, video, sound and complex documents. ObjectStore was designed for NCR Corp.'s NCR System 3000, and according to the company, is the only object-oriented DBMS available for NCR platforms running the Unix System Version 4 operating system.

Prices start at \$11,000.

Object Design
1 New England Executive Park
Burlington, Mass. 01803
(617) 270-9797

Software application packages

Infodata Systems, Inc. has released ShelfSpace, a software solution.

According to the company, ShelfSpace was designed to simplify the process of retrieving, storing and managing corporate policies and procedures, user manuals and

technical documentation. Specific words or phrases embedded within the text can be searched for, regardless of their location. A table of contents, chapter and section divisions and cross-referencing features are included.

ShelfSpace on the IBM mainframe costs \$75,000. The price will increase to \$99,000 in January.

Infodata Systems
#700

5205 Leesburg Pike
Falls Church, Va. 22041
(703) 578-3430

Beacon Software International has released The CICS Connection 2.1, a VSAM file sharing product. Multiple CICS and batch programs can update the same VSAM simultaneously without affecting on-line response time, the company reported. During the daytime, batch jobs can be run while CICS is in use, which eliminates file deallocation problems and end-of-the-month scheduling conflicts. Support is provided for single or multiple CPU's operating in fully distributed local and remote environments.

Prices for a single CPU license range from \$15,000 to \$45,000.

Beacon Software International
Suite 702
8027 Leesburg Pike
Vienna, VA 22182
(703) 883-9000

Utilities

Kisco Information Systems has introduced Release 2.0 of DSK Manager, a utility designed for the IBM Application System/400.

The product is a disk-management software tool that has utilization analysis programs and disk backup utilities. Data objects can be saved on the AS/400 while they are in use. DSK Manager features master and incremental backup, separate backups for data objects and the capability to back up data files while users are active on the system.

A onetime per-license fee for DSK Manager costs \$600.

Kisco Information Systems
120 Beverly Road
Mount Kisco, N.Y. 10549
(914) 241-7233

THE OBJECT IS TO HELP YOU.

The GE Advanced Concepts Center is ready to take you into the 21st Century with a full roster of world-class object-oriented courses.

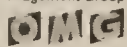
1992 Public Courses	week of:	10/26	11/2	11/9	11/16	11/30	12/7	1/11	1/18	1/25	2/1
Object-Oriented Analysis 4 Days Tuesday-Friday \$1745	SD				DC	BO		LA	KP	BO	
Object-Oriented Design 4 Days Tuesday-Friday \$1745	BO	DA	SD		DC			KP			LA
Object-Oriented Database Design 4 Days Tuesday-Friday \$1745	KP		DA		BO	SJ	CH	SJ			
Object-Oriented Methodology 2 Days Tuesday-Wed. \$995		DC	BO	CH		SD	DC	SF	KP	BO	
C Programming 4 Days Tuesday-Friday \$1745			SJ			KP		BO		SJ	
Advanced C Programming 4 Days Tuesday-Friday \$1745		DC	BO	KP			SJ			BO	KP
C++ Programming 4 Days Tuesday-Friday \$1745	SJ						KP		KP	SJ	BO
Advanced C++ Programming 3 Days Tuesday-Thursday \$1345				KP	BO	CH			LA		CH
C++ for Non-Programmers 5 Days Monday-Friday \$1845		KP		CH			SD	SJ	BO		CH

BO Boston, CH Chicago, DA Dallas, DC Washington DC, KP King of Prussia PA, LA Los Angeles, SD San Diego, SF San Francisco, SJ San Jose

GE Object-Oriented Analysis and Design Courses Endorsed by Object Management Group

To Register Call: 1-800-438-7246, 215-992-6200

FAX: 215-992-6299



1-800-GE TRAIN
GE Advanced Concepts Center

APPLICATION DEVELOPMENT

CASE • LANGUAGES • TOOLS

Fidelity's development plan leans on JAD and prototyping

BY JEAN S. BOZMAN
CW STAFF

BOSTON — Fidelity Investments has a sprawling information technology infrastructure, with computer processing in Dallas, Cincinnati and Salt Lake City supporting the fund-manage-

ment firm's 7,500 employees. With an eye to controlling both expense and time, Fidelity — which manages more than \$156 billion — is hammering out a single methodology for all new application development.

Fidelity managers are constructing what they see as a com-

prehensive development methodology designed to address their three-tiered computing environment (see related story page 74) while responding quickly to changing business needs.

"We have a very complex and diverse environment," said Chief Information Officer Albert Aiello. "Our philosophy has been one of using the appropriate tools for the appropriate application."

The new method, called Fidelity Advanced Systems Environment (FASE) 2000, is built on joint application development (JAD), rapid prototyping and enterprisewide data modeling. It was created 18 months ago, following discussions between Fidelity's senior management and managers from Aiello's information systems group, Fidelity Systems Co. "We believe we can cut the time to deliver new systems in half by



Nubar Alexandran

Fidelity's CIO Aiello: *You try to put the data near your customers, and you try to build in an open architecture'*

ON SITE

Fidelity Investments

Fidelity Investments' Fidelity Systems Co.
Boston, Mass.

- **Challenge:** To speed product completion at the investment firm and to maintain data integrity among multiple databases on IBM, Digital Equipment Corp. and Stratus Computer, Inc. systems.
- **Strategy:** Define a standard approach to software development to boost programmer productivity, using integrated CASE techniques, joint application development and prototyping. Standardize on product sets and use a common data repository to ensure timely and accurate data.
- **Results:** A standard software method, called FASE 2000, with the first client/server application scheduled for delivery to 500 desktop users this fall. FAMIS, a client/server system based on Microsoft Corp. Excel and Sybase, Inc. SQLServer.

1995 and improve quality at the same time," said George Hathaway, a vice president of software development at Fidelity Systems.

Fidelity, with an information technology budget that ranges from 13% to 15% of annual revenue, wants all development projects to support specific business requirements. This has spurred the use of JAD brainstorming sessions with users. Sometimes, less formal discussions between developers and users fit the bill, extending across many business units. The intense discussions

lead to on-screen prototyping of personal computer-based applications.

"We are a company made up of many companies," Hathaway explained, "so getting cross-Fidelity teamwork is critical to our success."

The FASE 2000 method is platform-independent, so it can be used to create mainframe, mini-computer or PC applications. To ensure data consistency across Fidelity systems, a common data model was built with the Brown-

Continued on page 74

Conference woos developers with PC-oriented tools

BY GARRY RAY
CW STAFF

BOSTON — Efforts to move systems development to personal computers, including applications for non-PC platforms, took center stage at last week's Software Development '92 Fall conference and exhibition.

Aimed primarily at PC-based developers and development managers, this year's conference was the forum for a number of new and updated product announcements. These included the following:

Atrium, Inc. in Waltham, Mass., unveiled Atrium/Browse and Atrium/Build, a pair of tools that aid in understanding, building and modifying object-oriented C++ programs.

The \$395 Atrium/Browse analyzes C++ source-code files to build a version-controlled repository of information, including the objects, classes, methods and files in a program, according to Atrium President Mike Ackroyd.

Atrium/Build, priced at \$795, is a superset of Atrium/Browse. It allows program designers to create and modify object models

through a set of Microsoft Corp. Windows-based graphical tools. Atrium/Build also generates C++ source code from those object models.

Available for Windows this fall and later for Sun Microsystems, Inc. workstations, the Atrium tools will be distributed by Semaphore in North Andover, Mass., Atrium officials said.

AD/Cycle product

IBM demonstrated SAA AD/Cycle PL/1 Package/2, an OS/2 2.0 implementation of the PL/1 programming language.

Designed to work with the Language Environment component of AD/Cycle — which provides a common programming interface, runtime support and various services for all compliant languages — the \$2,750 compiler can be used to develop or maintain PL/1 applications for use with IBM's MVS, VM/CMS, OS/400 or OS/2 operating systems.

According to Bob Thimsen, the OS/2 deliverables manager at IBM's San Jose, Calif., Santa Theresa facility, the new PL/1 "will enable customers to com-

pile and run programs on local workstations and to unload their host systems."

IBM also announced that it will begin beta-testing its C++ compiler, called the IBM Enhanced C Compiler.

Sextant for C, from **Sextant, Inc.** in Ann Arbor, Mich., is a \$2,000 reverse-engineering and development tool for C programs. It provides multiple windows for program decomposition, display of call graphs and cross-references of files, functions and various data types. All components are stored in a proprietary repository.

Sextant also includes a programmable text editor and provides an integrated environment that supports a variety of debuggers and compilers. The Unix-based tool supports the Open Software Foundation's Motif graphical interface and runs on a number of Unix workstations.

Hatboro, Pa.-based **Innovative Data Concepts** announced an addition to its Tesseract CXL (TCXL) User Interface Development System for Unix, DOS, Windows and OS/2. Called TCXL/Windows, the \$69 library

lets developers convert TCXL-DOS programs to the Windows environment with no modification, according to the company.

Watcom International Corp., based in Waterloo, Ontario, announced that it has begun beta-testing programs for its new C and Fortran compilers for Microsoft Windows New Technology. The company expects to ship both compilers during the first quarter of 1993, said Dave Boswell, Watcom's vice president of sales and marketing.

Additionally, the company showed a Windows version of Watcom SQL, a set of client/server database and development tools currently available for MS-DOS.

Software Productivity Research, Inc. in Burlington, Mass., announced a Unix version of its Checkpoint software estimation, measurement and assessment tool.

Like the currently available version for MS-DOS, the Unix version also performs "what-if" analyses of software project costs. Pricing has not yet been established, a company spokeswoman said.

IN BRIEF

CASE tool wins award

■ **Interactive Development Environments, Inc.** has won the Open Desktop Product of the Year award from The Santa Cruz Operation (SCO). The San Francisco-based developer of Software through Pictures, which is an integrated computer-aided software engineering product designed for the SCO Open Desktop environment, won in the software development tools category.

■ **Bull HN Information Systems, Inc.** in Billerica, Mass., and **Unidata, Inc.** in Denver will jointly sell Unidata's UniData relational database management system and application development system for the Bull DPX/20 reduced instruction set computing Unix platform.

Fidelity's new plan leans on JAD

CONTINUED FROM PAGE 73

stone Solutions, Inc. computer-aided software engineering repository tool. Data from multiple systems can be imported to a single data source, thus eliminating data errors caused by transfer of data between computer systems.

The first tangible product of FASE 2000 is a client/server accounting application called FAMIS, for the Financial And Management Information System. Scheduled to be available to end users next month, the FAMIS application took just six months to develop — far less than standard 12- to 18-month development cycles,

IS managers said. The same method is being used in more than 10 other programming projects.

FAMIS will allow end users to see "views" of financial data that was extracted from Fidelity's six mainframes and sent to a Digital Equipment Corp. VAX 4000 database server. The "client" part of the FAMIS application will run on 500 AST Research, Inc. PCs. The "server" part will run on a Sybase, Inc. SQL Server relational database management system and will be displayed with Microsoft Corp.'s Excel spreadsheet under Windows.

Programming, no matter how structured, will not ensure data consistency, however. For that reason, FAMIS draws on data that has been certified as correct by data specialists in business units, said Bert Alexander, Fidelity Systems' technical adviser for data management. "Network technology allows you to get data relatively easily, but you're not maintaining that data yourself," Alexander said. "That's why we have to instill this pride of ownership of data in each business unit."

Now that FAMIS is complete, Fidelity expects to be able to reuse some of its code

in future applications. But while the shapes of those programs are not clear, the guidelines for FASE 2000 development are: "You try to put the data near your customers," Aiello said, "and you try to build in an open architecture."

Fidelity's IS philosophy

The FAMIS client/server application is a sure sign of architectural synthesis at Fidelity. The firm has 6 IBM-compatible mainframes, 6 IBM Application System/400s, 3 IBM System/38 minicomputers, 23 Digital Equipment Corp. VAX systems and 11 Stratus Computer, Inc. machines.

Fidelity desktops are covered with thousands of workstations, including 350 Sun Microsystems, Inc. workstations, 150 DEC workstations and 3,900 PCs.

Despite its absorption of new technology, Fidelity has no near-term plans to cart away its mainframes. The mainframes will remain the source of all fund-management transaction data for the next decade, Fidelity CIO Albert Aiello said.

"Systems are built over time," he noted. "They're like the rings of a tree: They just keep growing, and over time you go back and you re-evaluate, and you might decide to chop some of them down."

In a move toward client/server systems, a growing array of relational database servers is bringing decision-support data right into the business units — and onto users' PC screens.

"The biggest problem in distributed architecture is performance and response time," said Aiello, who is also president of Fidelity Systems, Fidelity Investments' information technology subsidiary. "What we do is populate some [of the mainframe] data on the server, and it makes for better response times."

A team of technical specialists evaluates new technology, ranging from desktop PC and workstation "clients" to Unix parallel processor database "servers." But Fidelity does not jump at every new product — or change applications without cause. "We don't need to be No. 1 or No. 2 to use a new technology," Aiello said. "We could be No. 100 and still be way ahead of the world at large."

JEAN S. BOZMAN



MIGRATION

COMNET KEEPS YOUR NETWORK MOVING IN THE SAME DIRECTION AS YOUR BUSINESS NEEDS

At ComNet, we know your network has to do more than just serve as a showcase for "gee-whiz" technologies. It has to meet the specific needs of your organization and provide reliable, easy-to-use performance.

That's why we help you sort through the maze of current and next-generation networking options, to arrive at manageable solutions for growth. For example, the Executive Symposium at ComNet '93 will discuss the amortization of existing infrastructure vs. new technology investments, with an overview of how successful Fortune 2000 companies are re-engineering their networks.

The ComNet Conference will provide insight on carrier options for outsourcing, managing bandwidth, and the new generation of LAN management solutions, to name just a few. You'll understand the latest technologies and learn how to avoid costly mistakes.

For product evaluation, nothing beats the ComNet show floor, where over 450 companies will be on hand for ComNet '93. This is the place to sample new products at the beginning of the year (while they're still new) and look at the latest offerings from every leading manufacturer in networking and communications.

Want more? Just drop us a line and we'll send you complete information and a FREE exhibits pass for ComNet '93. Once you see what's in store at ComNet '93, you won't want to fly anywhere else next winter.

LIVENET

EXPERIENCE LEADING EDGE TECHNOLOGIES IN HIGH PERFORMANCE ENTERPRISE NETWORKING.

GET FREE ADMISSION TO OVER 450 EXHIBITING COMPANIES PLUS DETAILED INFORMATION ON ISSUES AND SOLUTIONS AT THE COMNET CONFERENCE, FEBRUARY 1-4, 1993, WASHINGTON D.C.

M2

NAME/TITLE _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP _____

MAIL TO: COMNET '93, P.O. BOX 9107, FRAMINGHAM, MA 01701-9107
PHONE: 800-225-4698 OR FAX TO: 508-872-8237.



FEBRUARY

1-4, 1993

WASHINGTON, D.C.

ComNet™ is produced by World Expo Corp. and sponsored by Network World.
LiveNet is sponsored by Computerworld.

SELL MORE PRODUCT.

Advertise in Computerworld's Product Showcase. It works.

800-343-6474
x744

NEW PRODUCTS

Compilers

CenterLine Software, Inc. has introduced the CenterLine-C ANSI optimizing C compiler.

The product was designed for Sun Microsystems, Inc. Scalable Processor Architecture workstations running Solaris 1.0 or 2.0. Portability of C programs across heterogeneous platforms is gained via CenterLine C's ANSI compliance. The product offers compliance with the Kernighan & Ritchie C language syntax and can compile a C program in K&R and ANSI mixed mode. Compatibility is also provided with the Sun C language syntax and Sun make files.

Prices start at \$495.
CenterLine Software
10 Fawcett St.
Cambridge, Mass. 02138
(617) 498-3000

Application development tools

Oasys, Inc. has introduced Oasys Native SPARC tools, a software development solution designed for Sun Microsystems Inc.'s Scalable Processor Architecture.

The tools have been integrated with Sun's native assembler/linker and include Version 1.86 of the company's Green Hills compilers and the multilanguage, X Window System-based Multi debugger. The compilers support four, intercallable high-level languages. Multi is the only debugger that allows users to simultaneously debug software applications written in C, C++, Fortran and Pascal as well as assembly code, the company reported.

Stand-alone prices for the Oasys C Compiler start at \$900.

Oasys
1 Cranberry Hill
Lexington, Mass. 02173
(617) 862-2002

Clark Development Co. has introduced the PCBoard Door Developer's Toolkit.

The tool kit provides users with a library for building Doors for the PCBoard bulletin board system software environment, the company reported. The product offers a number of features such as I/O functions with automatic error handling, string and manipulation functions and a single function call to initialize the door, read the configuration files and set up the communication port. The tool kit is compatible with networks that adhere to Netbios standard calls and supports versions of C and C++ products from Microsoft Corp. and Borland International, Inc.

The PCBoard Door Developer's Toolkit costs \$180.

Clark Development
Suite 303
3950 South 700 East
Murray, Utah 84107
(801) 261-1686

NeuralWare, Inc. has introduced DataSculptor, a Microsoft Corp. Windows-based data transformation tool.

The product was designed to reduce the amount of time required to preprocess and analyze data for neural network application development, the company reported. File formats can be read by DataSculptor off of a variety of spreadsheets and databases including DB2, Oracle, Excel and ASCII files. The product runs on

IBM personal computers and compatibles with Windows 3.0 or above.

The introductory price for DataSculptor is \$495.

NeuralWare
Building IV
Penn Center West
Pittsburgh, Pa. 15276
(412) 787-8222

Dr. Taylor's Software, Inc. has introduced Dr. Taylor's Test and Dr. Taylor's Big Test software utilities.

According to the company, Dr. Taylor's Test automates the testing of Microsoft Corp. personal computer DOS software. Most programming languages can

be used with Dr. Taylor's test including C, Basic, assembler, Cobol, dBase, FoxPro and Paradox. A PC acting as an ASCII terminal enables Dr. Taylor's Big Test to test Unix, VMS, mainframe and minicomputers. DOS 3.1 or higher is needed for both products, and Dr. Taylor's Big Test requires an ASCII terminal emulation program.

Dr. Taylor's Test costs \$199, and Dr. Taylor's Big Test costs \$499.

Dr. Taylor's Software
Pinnacle Meadows
Richford, Vt. 05476
(802) 848-7731

Code libraries

Andsor Research, Inc. has released Ver-

sion 1.0 of the Andsor Database Engine, a Microsoft Corp. Windows-based add-on library.

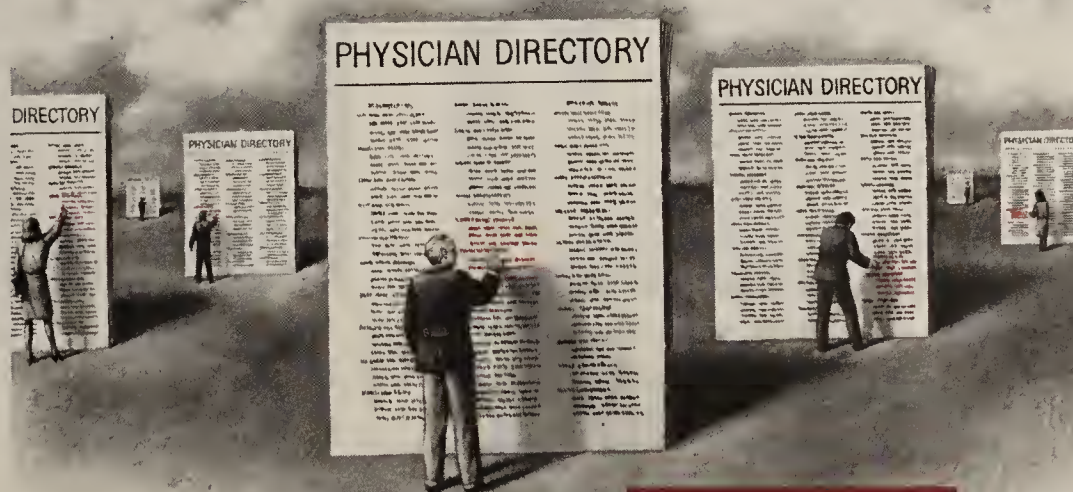
According to the company, the product enables users to add advanced database management capabilities to any program through Dynamic Link Library function calls. Sections of an application such as queries and updating operations can be replaced with procedures written in an optimized database language called ADL.

The Andsor Database Engine costs \$149.

Andsor Research
Suite 2000
390 Bay St.
Toronto, Ontario
M5H 2Y2 Canada
(416) 245-8073

XEROX

**To add value to their database,
they need to add color
to their data.**



What we put together.

A designated team for all requirements, 5 Xerox 4850 HighLight Color Laser Printers, on-site technical support, and the Xerox Total Satisfaction Guarantee.

Chuck Schweitzer
National Account Manager



This major insurance company needed to ensure its position in an increasingly competitive marketplace. That meant making customer service a priority. And that's a priority Chuck Schweitzer and a team from Xerox could help them achieve—with the Xerox 4850 HighLight Color Laser Printer.

As the first production-class duplex laser printer to offer highlight color, the 4850 lets them create documents that communicate more effectively. For instance, they can highlight variable data in Provider Directories so customers can find information they need quickly and easily.

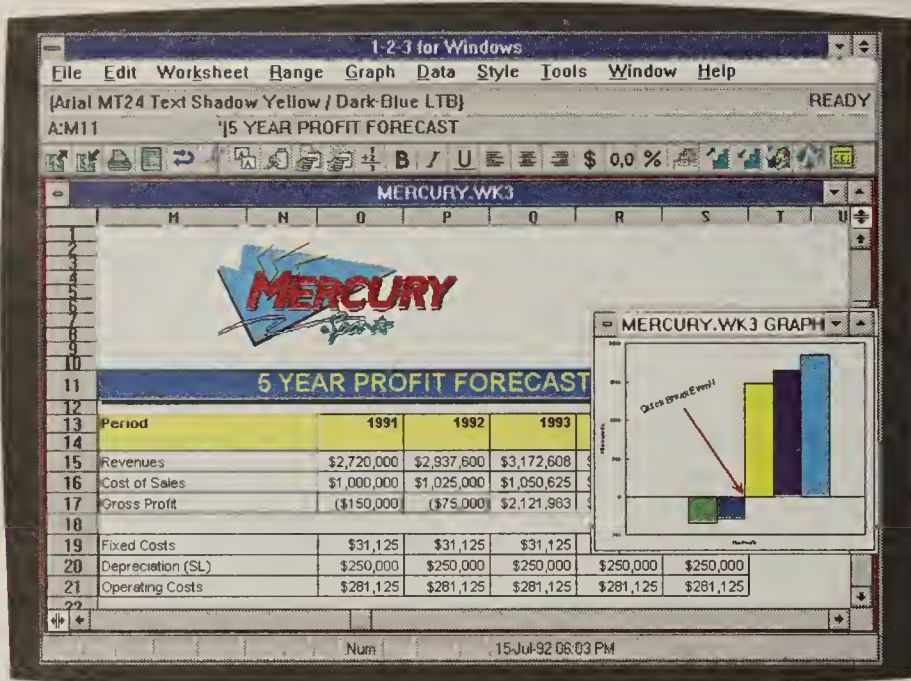
It's a service their customers especially appreciate. And

the company appreciates how the 4850 is the most cost-effective way to add color to variable data without incurring the prohibitive costs of offset printing. Not to mention the savings they enjoy by eliminating preprinted stock, reducing warehousing costs, and improving turnaround time.

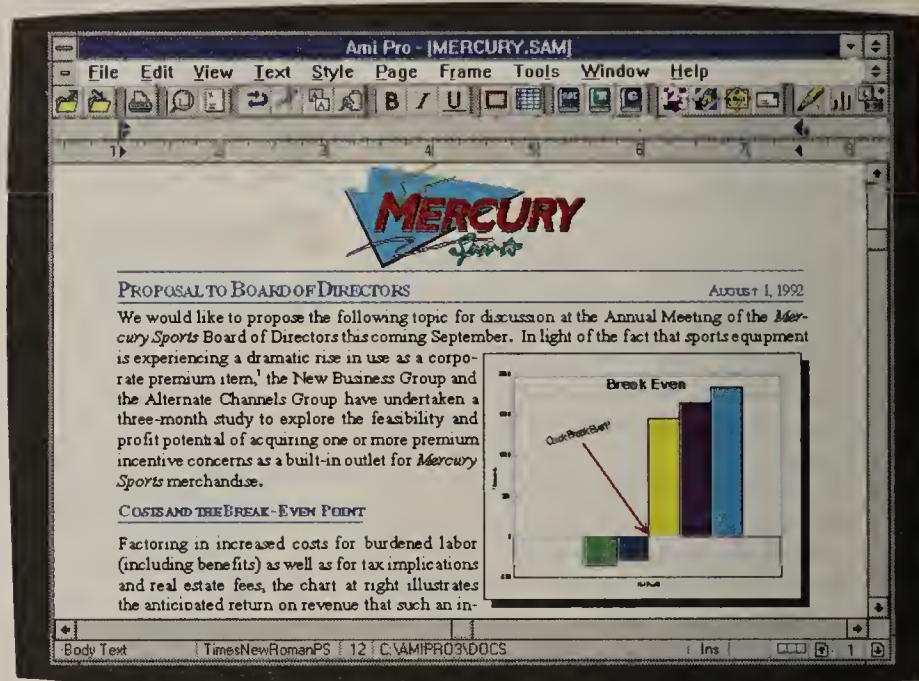
If putting together results like this would stand out in your business, call 1-800-TEAM-XRX, ext. 609B.

Xerox
The Document Company

Compared to Lotus Microsoft Office look



1-2-3 for Windows Release 1.1, the ideal choice for 1-2-3 for DOS users moving to Windows, now includes SmartPak, a disk which includes over 25 new features and usability enhancements.



The new Ami Pro 3.0 has been hailed as the best word processor for Windows, with new features that make it more powerful and easier to learn and use than Microsoft Word for Windows.

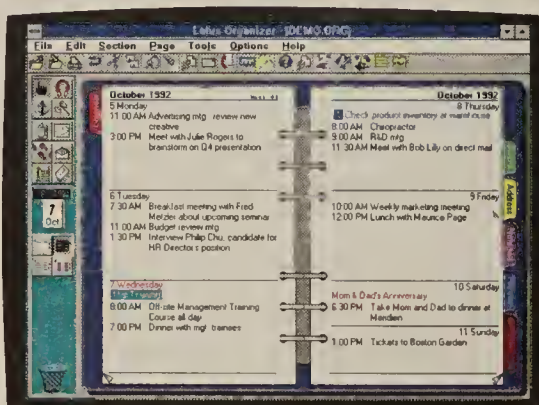
It's true. When you evaluate our complete solution for Windows™ desktops and then look at theirs, you'll see why ours is a better business choice.

Of course, both SmartSuite™ and Microsoft® Office include full-featured products. But SmartSuite has been recently updated to include 1-2-3® Release 1.1 with SmartPak™ and the newly released Ami Pro® 3.0, as well as Freelance Graphics™ and cc:Mail™.

All four of these award-winning products share a common interface as well as our innovative SmartIcons™. So when

you've learned one, you've learned them all.

What's more, SmartSuite delivers some truly unique integration capabilities that aren't possible with Office. All four SmartSuite products, for example, share data, text and graphs between each application smoothly and seamlessly. So when an outline produced in Ami Pro is imported to Freelance Graphics, it's automatically converted into a Freelance Graphics outline and full-slide presentation. And a 1-2-3 graph exported to Freelance Graphics will arrive, fully



For a limited time only, SmartSuite also includes Lotus Organizer, the computerized way to keep tabs on all your daily tasks.

editable. You can even move quickly between

*Offer expires 12/31/92 or while supplies last. **Suggested retail value. ***In Canada, call 1-800-GO-LOTUS. When you purchase 10 SmartSuite packages, you'll get a free cc:Mail for Windows Platform Pack (a \$495 value) and SmartMasters are trademarks of Lotus Development Corporation. cc:Mail is a trademark of cc:Mail, Incorporated, a wholly owned subsidiary of Lotus Development Corporation.

Lotus SmartSuite, is more like a cubicle.



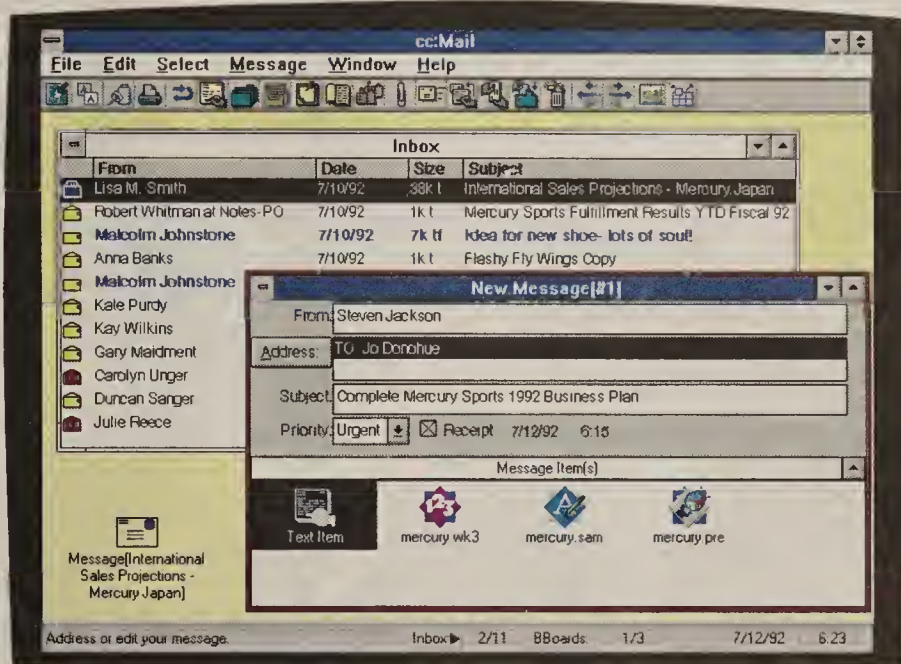
Award-winning Freelance Graphics is the easiest, fastest way to create a stunning presentation. It includes QuickStart, an on-line tutorial, and SmartMasters™ which automatically manage the design of your presentation for you.

SmartSuite applications just by clicking the icon of the application you want to open.

Better still, all SmartSuite applications are mail-enabled. So you can use cc:Mail to send "live" documents from within each application. Office, on the other hand, requires you to install and use an optional macro with Microsoft Mail 3.0.

Why is now the best time to buy Lotus SmartSuite instead of Microsoft Office?

For one thing, you just can't beat the total



cc:Mail is the world's leading LAN-based e-mail system that allows you to send text, files, graphics and faxes across all major networks and computing platforms without the need for new hardware.

value. In fact, for a limited time,* when you buy SmartSuite, we'll give you Lotus Organizer™ (a \$149 value**) absolutely free. It includes an on-screen calendar, to-do list, planner, address book, notepad and anniversary reminder that are fully integrated—unlike a manual organizer. Plus if you're upgrading from any version of 1-2-3, Symphony,® any Lotus word processor or graphics product, or cc:Mail, you'll save even more. So do the smart thing. Visit your Lotus Authorized Reseller or call **1-800-872-3387, ext. 6850***** for a free demo disk.

Lotus

SmartSuite for Windows

1-2-3, Ami Pro, Freelance Graphics, and cc:Mail

©1992 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3, Ami Pro, Freelance Graphics, Lotus Notes and Symphony are registered trademarks and SmartSuite, SmartIcons, Lotus Organizer, SmartPak are trademarks of Lotus Development Corporation. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation.

YOU CAN'T KEEP THE COMPETITION IN CHECK UNLESS YOU ANTICIPATE ALL THEIR MOVES.



FOCUS FROM INFORMATION BUILDERS: Nothing Else Lets You Analyze And Utilize
Mission Critical Information From Any Database On Any Platform.

UNMANAGEABLE DATA WILL NEVER BE INFORMATION

If only there was a way to work with different DBMS's on different platforms, with a single set of software tools.

A way to develop applications using all your data, no matter where it is, to run transparently on any platform.

A way that avoids system bottlenecks and fully utilizes your information investment, so that mission critical never becomes mission impossible.

THERE IS A BETTER WAY

It's called FOCUS from Information Builders. The specialists in distributed information systems.

And with more than one million users in every one of the Fortune 100, FOCUS is the number one 4GL

for end-user computing and application development.

DO ANYTHING WITH INFORMATION

FOCUS is powerful enough to provide decision support features like business graphics, spreadsheets and the best report writer in the business. With an unmatched ability to control and integrate critical information systems within your enterprise, FOCUS lets departmental users maintain applications that meet their requirements.

YOU WANT IT, FOCUS CAN CREATE IT

With comprehensive built-in tools you get the flexibility to develop anything from highly structured

data management applications and decision support systems, to simple ad hoc queries and reports.

With FOCUS, data becomes information, and isn't that exactly what you've always wanted?

So let your competition make the wrong moves while you make the winning one.

For more information on FOCUS and how it can fulfill all your data management needs or to attend a FREE Seminar...

Call 1-800-969-INFO

In Canada call 1-416-364-2760

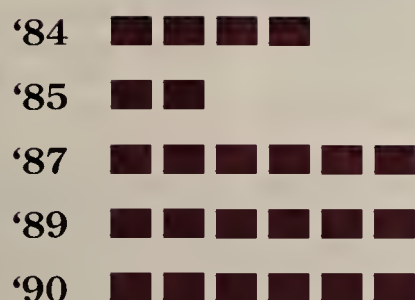
IBI  **FOCUS**
Information Builders, Inc.

PRODUCT SPOTLIGHT

MAINFRAMES

It's easy to get a good deal. Here's how to get a better deal.

Number of processors



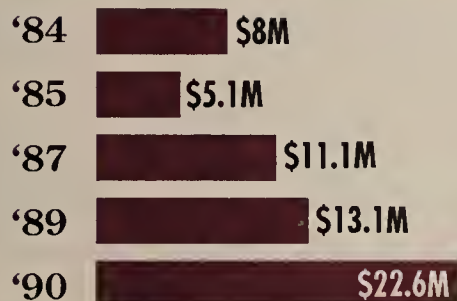
From '84 to '85 you could get the same performance with half the number of processors. After that, footprints got larger, but performance increases were much greater.

Performance (MIPS)



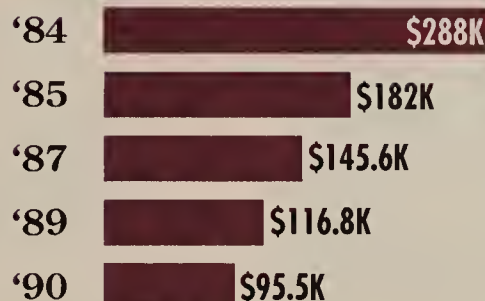
In fact, a 1990 model offered more than double the performance of a 1989 machine...

Price



... while the price increased by just two-thirds in that time frame. (Note that as performance tripled from '87 to '90, the price only doubled.)

Price/Performance (MIPS)



All told, you get three times the MIPS for the dollar today, compared to '84.

Source: International Data Corp.

BY ALAN RADDING

Hold everything. You've undoubtedly heard about the discounts, possibly even been tempted by the promise of 30%, 40% and even 50% off list prices. And it's true that no matter what your situation, you *can* get an exceptionally low price on a mainframe.

Take the case of Alamo Rent-A-Car, Inc. in Miami. Back when the airline wars were firing up

Radding is a free-lance writer based in Newton, Mass.

the rental car business, the company's IBM Enterprise System/9000 Model 900 hit 99.5% CPU utilization. Despite being in dire straits for a new machine, Tom Loane, vice president of computer services at Alamo, still got a great price. "I didn't use these exact words, but I let the IBM salesman know in no uncertain terms that if he took advantage of me now, he was dead meat," Loane says.

In a market like that, how can you possibly fail? For one thing, you can pay too much attention to the discount percentages. Any mainframe buyer can walk away with what appears to be a great deal, but some purchasers have

found that the 40% discount they worked so hard to get wasn't quite as good as the 25% discount they might have received down the street.

How could this happen? Well, only a portion of the reported discounts — about 20%, according to Jim Cassell, vice president and director of the large computer strategies service at Gartner Group, Inc. in Greenwich, Conn. — are in real hard dollars. The rest come as soft-dollar savings, such as one-year free warranties.

Not that soft-dollar savings don't count; they just have a tendency to hide the value of those supposedly great deals, and

there is the chance that you won't be able to cash in on them.

For instance, when Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., spent \$800,000 to upgrade from an IBM 4381 to an ES/9000 Model 210, IBM threw in \$100,000 worth of credit toward services.

"When we tried to use the credits, we found a lot of limitations. Or they were charging twice the price for the services to begin with," says Michael Baker, computer center manager. Next time around, he says, he'll insist on a "real" discount, even if it seems like less.

Soft-dollar savings can work
Continued on page 82

Long Strange Trip

You could say we've entered a new era of the mainframe.

Performance and storage are still growing in leaps and bounds, and innovations such as RISC and parallel processing are still being developed. But this year, unlike any other year, mainframes have started selling at a rough average of 30% off list price. Not so long ago, if you even so much as mentioned a discount, you'd lose the chance of getting your standard Volume Purchase Agreement, which entitled you to 10% to 15% off list price. So as the mainframe recasts, it seems like a good time to get an idea of where we are by looking back at where we've been.

Mainframes: The next 10 years

BY SUSAN GANNON
and FRANK GENS

It promises to be an interesting decade for the mainframe. In the next five years, IBM will unveil a low-cost computing platform and start delivering its much-discussed System Complex, or "Sysplex," model. By the late '90s, we'll see massively parallel systems from most mainframe vendors that will lower the costs of high-performance computing forever. Here's a look at what IBM and the plug-compatible vendors have in store for the next 10 years.

Third-quarter '92

Amdahl Corp. ships first eight-way processor, the 8650M. At this point in the game, eight-way processors are the best solution for high power. But bigger

Gannon is a senior analyst at Technology Investment Strategies Corp. in Framingham, Mass. Gens is vice president of technology assessment at the firm.

processors won't undo the high costs of mainframe computing. The eventual answer is parallelism, which will come later.

March/April 1993

IBM and Hitachi Data Systems Corp. announce eight-way processors. IBM answers Amdahl with its own eight-way processor, an enhanced 9021 with a 12% to 15% price/performance improvement. This new series will be upgradeable from the Summit model as well as the J technology machines, but at a higher price tag than the Summit models.

1993-1994

IBM dabbles with parallel processing via Sysplex. With a parallel system, multiple processors are linked together to act as a single system, offering price/performance that can compete with reduced instruction set computing (RISC)-based servers and networked personal computers. Parallelism can have many definitions, but the end result is the linking of

multiple microprocessors to act as a single system to an end user and an application.

IBM's first shot at parallelism in the mainframe world is through its Sysplex architecture, to which IBM will add high-speed interconnect and parallel server versions of CICS and DB2 in the next two to three years. The resulting 390 clusters will deliver performance in the billions of instructions per second (BIPS) range.

Microprocessor-based mainframes deliver more competitive cost per million instructions per second (MIPS). While this will answer the demand for high performance, IBM will also need to address the low-cost price/performance arena.

Here, the company will offer tightly coupled versions of its System/390-based CMOS technology that resides in today's 9221s. These micro-based systems — which are expected to become available in the next 12 to 24 months — will eventually be available in up to 16-way configurations.

By themselves, these micro-based 390

mainframes will not address the high-performance market because their performance will still fall below that of their big brothers based on traditional, bipolar, multichip processors. But they will address the desperate need of the 390 architecture to offer more competitive price/performance.

To address the growing challenge from microprocessor-based parallel systems, IBM will have to offer high-performance and low-cost MIPS. Thus, we believe the future of the 390 line will be in using the combination of CMOS micro-based 390 models in large Sysplex configurations.

Late 1993

IBM hedges its bet with a RISC-based parallel large system. Although IBM claims that the above strategy can meet the performance and the price/performance of RISC-based parallel systems, it appears that the company is beginning to hedge its bet with a second large-system architecture.

Mainframes shipped in the past year

Vendor	Number of CPUs	Memory range (bytes)	Cache capacity (bytes)	Number of channels/channel speed	Performance (MIPS)	Supports	Operating system	Escon compotibility	Monthly maintenance fee for processor	Base price
Amdahl Corp. (408) 746-6000 5995-8650M, 5995-6650M	8, 6	512M-2G	256K per CPU	128-512/Up to 17M byte/sec.	357, 280	Ethernet, Token Ring	MVS, VM, TPF, UTS	4Q '92	\$45,343, \$36,274	\$30,089,431 (8650M), \$24,071,544 (6650M) includes 512M bytes main storage, 128 channels
5995-4550M, 5995-3550M	4, 3	256M-1G	256K per CPU	128-256/Up to 17M byte/sec.	204, 157	Ethernet, Token Ring	MVS, VM, TPF, UTS	4Q '92	\$25,573, \$21,624	\$17,500,625 (4550), \$14,200,701 (3550) includes 256M bytes main storage, 128 channels
Bull HN Information Systems, Inc. (508) 294-6000 DPS 9000/52, DPS 9000/42, DPS 9000/32	2	64M-512M	128K	48/4.5M byte/sec.	NP	Ethernet, Token Ring, SNA, Bull, DSA	Bull GCOS 8	1994	\$2,013-\$4,025, depending on model	\$2,392,000 (DPS 9000/52), \$1,794,000 (DPS 9000/42), \$1,196,000 (DPS 9000/32) includes two CPUs, 64M bytes main memory
DPS 9000/51, DPS 9000/41, DPS 9000/31	1	64M-512M	64K	24/4.5M byte/sec.	NP	Ethernet, Token Ring, SNA, Bull, DSA	Bull GCOS 8	1994	\$963-\$2,118, depending on model	\$1,258,400 (DPS 9000/51), \$920,400 (DPS 9000/41), \$572,000 (DPS 9000/31) includes one CPU, 64M bytes main memory
DPS 9000/21	1	32M-512M	64K	24/4.5M byte/sec.	NP	Ethernet, SNA, Bull, DSA	Bull GCOS 8	1994	\$438	\$250,000 includes one CPU, 32M bytes main memory
Control Data Systems, Inc. (612) 482-4207 Cyber 970-11, 970-31, 970-32	1-2	128M, 256M, 512M	32K	40/Up to 25M byte/sec.	10.4 (970-11), 17.3 (970-31), 34.6 (970-32)	Ethernet, X.25	NOS/VE, NOS	No	\$1,925-\$4,671, depending on model	\$1,650,500 (970-32), \$1,032,000 (970-31), \$888,000 (970-11) includes 128M bytes DRAM
972-11, 972-31, 972-32	1-2	128M, 256M, 512M	32K	40/Up to 25M byte/sec.	10.4 (972-11), 17.3 (972-31), 34.6 (972-32)	Ethernet, X.25	NOS/VE	No	\$1,816-\$4,501, depending on model	\$1,600,500 (972-32), \$982,000 (972-31), \$832,000 (972-11)
Digital Equipment Corp. (508) 264-5670 VAX 10000 family	1-4	256M-512M	10K per CPU, 4M on-board processor	1-4/up to 400M byte/sec.	35-125 VUPS	Ethernet, TCP/IP, DECnet	OpenVMS	No	Included in system price	\$597,000-\$1,400,000
Hitachi Data Systems Corp. (408) 970-1000 GX8310, GX8210, GX8110	1-3	128M-6G	None	128 maximum/Up to 17M byte/sec.	NP	SNA	MVS, VM	Yes	\$8,135-\$17,306, depending on model	\$11,324,000 (GX8310), \$7,818,000 (GX8210), \$5,062,000 (GX8110)

NP=Information not provided by the vendor.



YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of \$29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name
Title Company
Address
City State Zip
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year
* U.S. Only. Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.
Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Rafining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____
(Please specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
80. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4238-5



YES, I want to receive my own copy of COMPUTERWORLD. I accept your offer of \$29.95* for 39 weekly issues — only 76¢ per issue.

First Name MI Last Name
Title Company
Address
City State Zip
Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Basic Rate: \$48 per year
* U.S. Only. Canada \$74.97, Central/South America \$130, Europe \$195, all other countries \$295. Foreign orders must be prepaid in U.S. dollars.
Please complete the information to the right to qualify for this special rate.

COMPUTERWORLD

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medicine/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Rafining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. System Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distr./Retailer
95. Other _____
(Please specify)

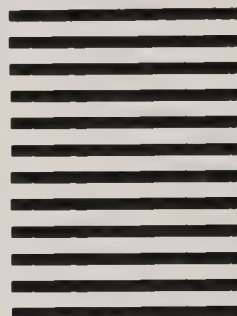
2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Tech. Planning, Adm. Svcs., Data Comm. Network Sys. Mgt.; LAN Mgr., PC Mgr.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
80. Sys. Integrators/VARs/Consulting Mgt.
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. IS INVOLVEMENT (Circle all that apply)
Please indicate your involvement in IS/MIS/DP.
A. Manage/Supervise IS/MIS/DP Staff
B. Recommend/Specify IS Equipment
C. Purchase IS Equipment
D. End-user of IS Equipment
E. No Involvement

E4238-5



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

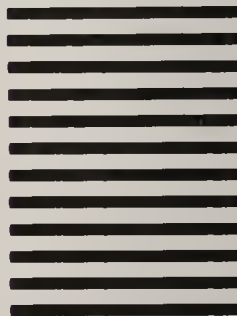
POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P.O. Box 2044
Marion, Ohio 43306-4144



Last February, IBM announced the formation of a supercomputing development center in Kingston, N.Y., under its mainframe development organization. This organization is tasked with developing highly parallel systems based on the RISC System/6000's RISC-based Power microprocessor.

The first models of what is called the Starburst family are expected to be delivered by late 1993 and will be truly parallel.

Mid- to late 1990s

Starburst moves quickly into mainstream commercial processing. IBM is initially aiming Starburst at technical supercomputing, but it is clear that its technology and design also address commercial concerns such as on-line transaction processing and decision support, high performance and costs that are competitive with distributed systems.

Within 24 months of its introduction, IBM is expected to target Starburst as a high-performance database machine (perhaps fitting into a Sysplex), supporting a broad range of commercial computing environments.

By the end of the decade, Starburst

will become the successor to the 370/390 architecture.

End of the decade

RISC-based multimicro servers make traditional mainframes obsolete. While 390 microprocessor-based mainframes will stretch to hit the \$10,000 per MIPS level by mid-decade, RISC-based large-scale servers such as Starburst will be much cheaper. In terms of performance, RISC microprocessors are competitive with and appear poised to pass the performance of 390 mainframe engines.

It is not just coincidence that almost every large-system supplier has begun developing a next-generation system based on just such a multimicroprocessor (mostly RISC) design.

Mainframe vendors aligning themselves with RISC include: Amdahl with **Sun Microsystems, Inc.'s** Scalable Processor Architecture (SPARC); HDS with **Hewlett-Packard Co.'s** Precision Architecture-RISC; **Bull HN Information Systems, Inc.** with IBM's Power; **Fujitsu Ltd.** with SPARC and **AT&T/NCR Corp.** with CISC-based Intel Corp. microprocessors. •

Shopping for the lease

The rampant discounting and intense competition that marks the mainframe market is mirrored in the leasing industry as these organizations — like the mainframe vendors — vie for a dwindling customer base.

Although **IBM** is increasing its share of the leasing market about 5% to 10% per year, according to industry observers, it's simply taking a bigger share of a smaller pie. Because residual values are falling, leasing is increasingly less attractive, especially with interest rates on conventional loans so low.

What's in it for you? Another opportunity to negotiate.

"You have to shop the leasing," advises Todd Dixon, vice president at Northeast Utilities in Hartford, Conn. "Even ICC will negotiate," he says, referring to **IBM Credit Corp. (ICC)**.

Variables to negotiate in leasing contracts include interest rates, esti-

mated residuals and terms.

When Northeast Utilities leased its new mainframe through ICC, it arranged for the disposal of the old mainframe, factoring in the residual value.

And when should you lease rather than buy? A lot depends on how long you plan to use the machine.

"We used to lease, but lately our practice has been to buy," says Marvin Hamann, manager of information systems operators at Land-O-Lakes, Inc., a dairy products producer in Minneapolis.

Now, the company only considers leasing if it doesn't expect to keep the machine for more than two years.

The trick to getting the most from a leasing deal, says William Jackson, director of IS at Aristokraft, Inc., a cabinet manufacturer based in Jasper, Ind., is a short term. Don't go for a lease beyond three years, he advises.

ALAN RADDING

Vendor	Number of CPUs	Memory range (bytes)	Cache capacity (bytes)	Number of channels/channel speed	Performance (MIPS)	Support	Operating system	Escon compatibility	Monthly maintenance fee for processor	Base price
IBM (800) 426-2468 IBM ES/9000 Model 860	5	9G maximum	None	256/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	\$19,315,000
IBM ES/9000 Model 740, 660, 640	2-3	4.6G maximum	None	128/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	\$11,610,000 (740), \$9,222,000 (660), \$8,220,000 (640)
ES/9000 Model 520	1	2.3G maximum	None	64/10M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	\$4,681,000
ES/9000 Model 610, 570, 490	2-4	2G	None	96/17M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	\$5,700,000 (610), \$4,275,000 (570), \$2,920,000 (490)
ES/9000 Model 180	1	512M maximum	None	32/17M byte/sec. (Escon)	NP	Ethernet, Token Ring	MVS/ESA, VM/ESA, AIX/ESA, VSE/ESA	Yes	NP	\$462,000
NCR Corp. (513) 445-5000 3600 System	2-8 per node, scalable to 300 nodes	64M-512M per node, scalable to 300 nodes	256K per node, scalable to 300 nodes	8 per node, scalable to 300 nodes/ 100M byte/sec.	40 per CPU	Ethernet, Token Ring, V.35, RS-232, T1, X.25	Unix V, Release 4	2Q '93	\$13,000	\$3,567,423 includes 384M bytes memory
Tandem Computers, Inc. (408) 285-6000 NonStop Cyclone/ R System	2	64M-2G	1M-8M	2-16/5M byte/sec.	NP	Ethernet, Token Ring	Guordion 90 (Tondem)	No	\$661	\$279,000 includes two CPUs, 64M bytes memory, 2G bytes disk storage
Unisys Corp. (215) 986-4011 A19-642, A19-632, A19-622	2-4	192M-2.304G	None	96/4.5M byte/sec. (SCSI), 10M byte/sec. (IPI)	184 (A19-642), 138 (A19-632), 97 (A19-622)	Ethernet, Token Ring	MCP/AS	No	\$14,150-\$25,125, depending on model	\$18,200,000 (A19-642), \$13,760,000 (A19-632), \$9,740,000 (A19-622) includes 2-4 CPUs, 192M bytes memory
2200/900	2-8	256M-2G	4.5M	384/4.5M byte/sec.	NP	Ethernet	OS1100	No	\$8,700	\$8,299,464 includes two CPUs, 256M bytes memory
A19-611	1	96M-1.52G	None	48/4.5M byte/sec. (SCSI), 10M byte/sec. (IPI)	51	Ethernet, Token Ring	MCP/AS	No	\$9,190	\$5,270,000 includes one CPU, 96M bytes memory
GX8620, GX8520, GX8420, GX8320, GX8220	2-6	512M-10G	None	256 maximum/ Up to 17M byte/sec.	NP	SNA	MVS, VM	Yes	\$15,573-\$32,457, depending on model	\$20,485,000 (GX8620), \$17,870,000 (GX8520), \$15,006,000 (GX8420), \$12,967,000 (GX8320)

Your wheeling and dealing guide

COMPARE USED

Want a new computer? Shop used! According to used computer dealers, a lot more mainframe buyers are shopping used for the first time — without intending to buy. The dealers suspect they are being used mainly as leverage in negotiations for new mainframes.

Of course, you can also shop used to buy used and get a great deal that way. "Our business runs fine with second-generation hardware. We haven't bought a new machine for a long time," says Marvin Hamann, manager of information systems operators at Land-O-Lakes, Inc., a dairy products producer in Minneapolis. The company's latest acquisition was a used IBM 3090 Model 200 E.

IBM tried hard to get Hamann to bite on a new machine. "They were offering us a discount off a new machine, but if you take 20% off a \$3 million machine, that's still a lot of money," he says. Hamann paid \$400,000 and got the horsepower he needed to run a large IDMS database for at least three years before upgrading.

To get the best price, Hamann called

If you work for it, you'll get a deal.

Be innovative, and you'll get an even better deal.

Here are some strategies that companies are taking before signing on the dotted line.

nearly a dozen used computer dealers, including Amdahl Corp. dealers, as well as all the leasing companies. To make comparisons easier, he required that the companies itemize their offers instead of combining the machine with the freebies.

TIME IT WELL

What do comedy and mainframe purchases have in common? The importance of timing. That means understanding the fiscal year and quarterly pressures that drive a sales organization. If you can coordinate your purchase with the closing of the books, you may receive an unusually generous deal as the sales organization scrambles to fatten its numbers.

"We installed our new mainframe in December 1991 and got a pretty good

deal," says William Jackson, director of IS at Aristokraft, Inc., a cabinet manufacturer in Jasper, Ind. The company purchased a small Enterprise System/9000 Model 190 to replace a 4381 Model 14.

Ordinarily, Aristokraft would have turned to the used market for its mainframe, but "there weren't any available in the size we wanted," Jackson explains. The company also looked at downsizing to a minicomputer. Unfortunately, "it just wasn't feasible to replace our mainframe software. We would have had to scrap everything," Jackson says.

The machine was a good buy in more ways than one. The Model 190 turned out to be in the same software category as the 4381, but several of the Enterprise Systems Architecture software items were priced lower. As a result, software licensing costs actually dropped about \$200 a month (see story page 83).

compatible manufacturers (PCMs) can't offer the software-related soft discounts that IBM can (see story page 83), but they compensate with a lower list price and greater hard-dollar discounts. As a rule of thumb, the PCMs try to stay at least 10% to 15% below IBM, according to Nancy Stewart, a senior industry analyst at Dataquest, Inc.

Even if you don't actually leave IBM, your consideration of other vendors may force IBM to be more competitive.

When Duke Power Co. in Charlotte, N.C., put out bids to replace its 3090 Model 600 J in January, it found a very competitive environment. The company had bought IBM exclusively for 10 years, "but in today's environment, we just couldn't afford not to competitively bid this machine," says Alvin Park, manager of data center operations.

After the bids were received, the competition got even hotter. One vendor came back offering to sweeten the deal. Another suggested that if the company booked the business in the second quarter, it could do even better. Another threw in a package of software and other soft discounts.

After benchmarking the machines to pin down their actual performance and evaluating the bids according to an extensive set of criteria (see chart below), Duke went with an Amdahl Model 5995.

Northeast Utilities in Hartford, Conn., experienced a similar situation. "We got quite a bidding war going on," recalls Todd Dixon, vice president at the firm. When it came down to the bottom line, however, IBM rose to the challenge.

Continued on page 83

They saved and are glad

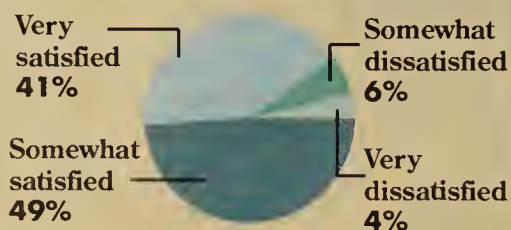
Of 126 respondents who have purchased a mainframe in the past two years:

Most received a discount between 10% and 40% off list price

0%-9% discount:	6
10%-24% discount:	23
25%-39% discount:	24
40%-59% discount:	17
More than 60% discount:	1

(55 respondents didn't know what type of discount they had received.)

The overwhelming majority were satisfied with the price they paid



Source: First Market Research

CW Chart: Janell Genovese

Re-writing your favorite mainframe applications makes about as much sense as re-inventing the wheel.

But that's how it feels if you are moving to Unix while your programs stay on the mainframe.

We'll help you port your existing applications to Unix. So, instead of wasting time re-writing them, you spend it writing new ones.

uni-SPF™ Includes Dialog Management Services!

uni-REXX® Easy ports for existing applications.

uni-XEDIT® Familiar full-screen editor.

the workstation group
the business choice for open systems

800-228-0255

wrk/grp
the workstation group

SHOP 'THE OTHER GUYS'

Now more than ever is the time to shop the competition — whether you're just looking or are serious about buying. Plug-

Don't get 'sucker-punched'

It's easy to be blinded by great hardware prices, only to be sucker-punched by unseen software license fees or hardware upgrade charges down the road. Smart shoppers such as Alvin Park, manager of data center operations at Duke Power Co. in Charlotte, N.C., are developing detailed bid evaluation models. Park's model worked so well, he plans to use it again at the end of this year when he puts out a bid to replace an IBM 3090 Model 600 J.

Source: Alan Radding

CW Chart: Janell Genovese

RFP

- The price of each item individual (no bundling).
- Performance benchmarks.
- Specified discounts on future hardware upgrades.
- Warranties and extended warranties.
- Software licensing costs (current and future).
- Environment costs (power, cooling, etc.).

How to get a better deal

CONTINUED FROM PAGE 79

to your advantage; you just have to link them to what you can really use. Last December, electric power producer Northeast Utilities in Hartford, Conn., shaved 43% off the list price of a \$35 million ES/9000, with much of the savings in added-value goodies. The deal was part of IBM's Market Basket program, which bundles a variety of freebies and soft-dollar discounts, says Todd Dixon, vice president at the firm. Included were free disk drives, a year's free maintenance and a

large discount on IBM's ImagePlus software — all things the company was planning to buy anyway.

The bottom line is, there is more to getting a great deal than simply ripping the red tag off the box. Besides scrutinizing the deal dangled in front of you, you might want to join the crowd of buyers doing a lot more legwork evaluating IBM's competitors. Many are looking at the used market, which — to maintain its price differential — is very negotiable.

Prices should get even better. Average discounts are expected to drop to 23% this year, compared with an average 18% discount in past years, Cassell says. Others, such as Technology Investment Strategies Corp. in Framingham, Mass., log the average discount at 30%. •

The software factor

No matter how accurately you forecast software licensing costs, they almost always end up higher than you estimate. Nothing has more of an effect on mainframe cost of ownership.

And it's here that IBM has tended to hold a distinct advantage. Unlike the plug-compatible vendors, IBM can play with software licensing prices to move hardware.

For instance, IBM deferred the impact of the full software license upgrade when Hartford, Conn.-based Northeast Utilities moved from a "Group 60" machine to a "Group 80" machine. "They gave us one year at 'Group 70,'" says Todd Dixon, vice president at the Northeast, which saved on software costs.

Some people buy used machines for this very reason: to get a lower software category classification and thus cheaper software.

Sometimes, though, you can get software savings through the compatible vendors, as Alvin Park, manager of data center operations at Duke Power Co. in Charlotte, N.C., discovered.

When Duke Power put out its request for proposal, Amdahl Corp. bid a model that had a lower IBM rating (and was thus in a lower category) than the model bid by IBM. By choosing Amdahl, the company's software licensing costs would not increase, even though the company's benchmarks showed it to be an equally powered machine.

"If we had bought the IBM, all our software licensing costs would have gone up, too," Park says.

Just be sure to watch for traps, because sometimes a seemingly innocent hardware upgrade can necessitate a costly software boost.

For instance, Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., found that its newly purchased Enterprise System/9000 lost 30% of its performance when running the company's old versions of software (SP versions of VSE under VM), despite assurances that there would be no problem. "It forced us to go to the ESA operating system, and that drove our [application] software costs through the roof," says Michael Baker, computer center manager at the company.

On the other hand, Oregon Mutual Insurance Co. in McMinnville, Ore., saw a substantial drop in software licensing costs when it moved to Enterprise Systems Architecture (ESA) software, part of an IBM strategy to use software to move companies to ES/9000 hardware.

"Over five years, the software cost savings will pay for the machine," says Cary Gardner, computer operations manager at Oregon Mutual.

ALAN RADDING

Continued from page 82

Avondale Mills, Inc., a textile manufacturer in Sylacanga, Ala., looked seriously at a Hitachi Data Systems Corp. machine before buying an Enterprise System/9000 Model 210 from IBM. The price differential, about \$20,000 on an \$800,000 machine, wasn't enough to justify a switch.

The firm opted for IBM, saving about 11% as part of IBM's early-install program, which gave the company free use of the machine.

CONSIDER LOYALTY

On the other hand, declaring yourself a true Blue shop and sticking with IBM has its rewards. Duke Power followed an IBM-only policy for 10 years and enjoyed a level of system integration equivalent to none before it changed.

"We didn't shop around," says Cary

Gardner, computer operations manager at Oregon Mutual Insurance Co. in McMinnville, Ore. It was IBM's extensive service network rather than great prices that led the company to declare allegiance to IBM. "We're in a remote location, so we feel we get better service here from IBM," he says.

To keep IBM honest, however, Oregon Mutual shopped the used IBM market. The company was looking for a small mainframe, an ES/9000 Model 150, to replace its IBM 4381. In the end, IBM matched the discounts the company found in the used market on a new machine.

Oregon Mutual netted a 40% savings on the new maintenance contract and saved on software licensing. •

ALAN RADDING

Price per MIPS

Amdahl \$50,000

Hitachi \$53,000

IBM \$65,000

Source: Gartner Group, Inc.



"HOW CAN WE CUT NETWORK COSTS WHEN OUR TRAFFIC IS GOING UP 20% A YEAR?"

A critical issue faces almost every data communications network: Management wants cost control while users demand greater access.

It doesn't seem to matter how big your network is. What business you are in. Or where in the world you send or receive data.

Enhance your network's peak demand capacity, create rock-solid reliability and still cut your outside telecomm charges up to 75% with the new Datamizer IV. Since 1983,

Datamizers have collectively saved our clients over \$450 million in line charges—worldwide and domestically.

No other single device can offer the Datamizer's integrated bandwidth on demand function, link maintenance, stat/inverse multiplexing, data compression and other transmission enhancements in a simple, plug-in installation. No re-engineering. No additional equipment purchases. No training and no downtime.



Performance and reliability improvements completely transparent to system operator and system user. The new Datamizer IV. The connection between performance and profitability.

CALL (313) 995-1555

Symplex

Net savings for your network

Symplex Communications Corporation, 5 Research Drive, Ann Arbor, MI 48103, FAX: (313) 995-1564
In Europe, Gevers Deynootweg 61, 2586 BJ Den Haag, The Netherlands, FAX: 31 (0) 70-3521711

Commitment.

To the best customer service.

Commitment.

To the highest standards of quality.

Commitment.

To the 9751 Business Communications System.

Commitments are important. Living up to them is even more important. And our customers are telling us we're doing just that. According to Dataquest, you rated us the highest in customer satisfaction for PBX's for the last half of 1991. Thank you.

We promised we wouldn't rest on our laurels. And you told us we're not, by giving us the top rating again for the first half of 1992.

But our commitment extends to more than just outstanding customer service. It also extends to our 9751 Business Communications System. Siemens is committed to protecting your investment in the

9751. Offering the best applications and call center solutions in the market, it's our strategic platform for the next generation of technology. And then there's the HCM 200. With key system features and PBX functionality, it's an integral part of our strategy.

We're committed to increasing your productivity, your revenues, and the service you provide to your customers.

We know the more we can do for you, the more you'll stay our customers.

Call us today at
1(800) 624-8999,
Ext.235.

ROLM

A Siemens Company

IN DEPTH

INDUSTRIES FOR JOBS



Lynn Tanaka

BY EMILY LEINFUSS

Job hunting can sometimes be like looking for a needle in a haystack. You know there is that perfect position out there for you, but what position that is and where to find it often remains hidden. This economic slump we're in isn't helping matters, with companies in industry after industry in trouble. Well, we'd like to help you find that oh-so-elusive needle. We might not be able to hand you a job, but we can certainly tell you where to investigate. We asked experts and the gainfully employed to help us compile a list of hot industries with existing job opportunities. Here are our picks:

Health care. Healing the sick has become very big business in the U.S. In 1992, the health care industry hit \$817 billion, according to the U.S. Department of Commerce. That's a whopping 14% of the gross national product.

"It's a constantly growing industry. More people will need health care as the population grows older," says Chuck Muller, a principal at Andersen, Jones & Muller Associates, an information systems recruitment firm in Southfield, Mich.

Leinfuss is a free-lance writer based in Sarasota, Fla.

As a boon to IS people, all those recession-proof dollars come wrapped in a highly technology-reliant environment. Job demand is high. One recruiter says he filled 20 IS positions this summer.

The reason for such high demand is that many hospital information technology departments have separate, multiplatform environments, Muller says. They may run clinical information systems on a Digital Equipment Corp. VAX, use IBM Application System/400s with personal computers for physician information systems and put administration and cost accounting systems on IBM mainframes. Companies are looking for manpower that can integrate these islands of technology.



"The challenge for us," says Edward Pastor, director of IS at Swedish American Hospital in Rockford, Ill., "is to get all our systems to talk to one another. We have stand-alone cost accounting systems and statistical systems, and we need to be able to get data from all of them, especially for scheduling," Pastor says.

Beyond technical skills, IS chiefs are looking to hire people who have "extras," such as a background in health care management or biology or a course in medical terminology, says John Glaser, vice president of IS at Brigham and Women's Hospital in Boston.

Glaser says he looks for three things in po-

tential hires: brains (someone as bright "as a 140-watt bulb"), passion for the work and a demonstrable reason for being in the health care business. "Usually I find people with a streak of altruism," he says.

Recently, Glaser hired six IS professionals to bolster his integration efforts. Half of them had technical experience — particularly in the Token Ring environment. Of the remaining three, two were physicians with IS training and one had been a nurse.

Salaries in the field start at about \$30,000, according to *Computerworld's* 1992 salary survey. For instance, senior programmers in the health care field make an average of \$36,313, while IS managers/supervisors pull in \$55,375.

According to Suzanne Fairlie, president of ProSearch, an IS recruitment firm in Philadelphia, typical advancement in the health care field comes from moving from hospital to hospital or hospital chain to hospital chain.

Banking/Financial services. Despite the bad-boy thievery of junk-bond kings such as Mike Milken, banking and financial services is still alive and kicking.

In banking, the opportunities are geography- and size-dependent, with large banks and the Midwest your best bet. "In the Midwest, banks have not been hit as hard [as other areas of the country]. They are looking for IS staff," Muller says.

For example, Muller's firm is currently

Continued on page 86

Ongoing coverage of employment prospects appears weekly in Computerworld's Careers section. For information on the state of jobs in specific industries, turn to these stories in the second half of our calendar:

July 6: Mail order

Aug. 3: Brokerage houses

Sept. 7: Discount retail

Oct. 5: Media

Nov. 2: Health care

Dec. 7: Tourism trades

Continued from page 85

trying to fill four IS positions at the National Bank of Detroit.

Muller explains that many institutions in the Midwest are run by conservative managers who didn't get involved with risky property management, which has hurt many savings and loans.

Banking IS managers on average earn \$58,242, while senior programmers earn \$33,958, the *Computerworld* survey found.

Financial services firms — particularly mutual funds and brokerage houses — are also doing quite well and hiring, says Gary Kaplan, president of Gary Kaplan & Associates in Pasadena, Calif. "A lot of people who don't normally invest in the market are investing in mutual funds because they are a safe bet. This is causing back-office operations to be thrown into orbit, and they are staffing accordingly."

Technical expertise in this arena varies, depending on the company's architecture, but Kaplan says he sees a great demand for backgrounds in end-user computing and local-area network skills because of the highly transaction-oriented environment.

Computerworld's survey says IS managers in finance on average make \$71,469, with senior programmers making \$34,000.

Kaplan adds that the insurance area of financial services is positive for jobs, particularly health care insurance, the property and casualty field and professional liability insurance.

All of these concerns — banking, brokerage and insurance — are heavily transaction-oriented and computer-dependent, Kaplan says. Networking, workstation and end-user skills will pay dividends in the long run, particularly local- and wide-area networking and PC operating system experience.

You can also make yourself more marketable by delving into imaging systems, expert systems/artificial intelligence and client/server technology — areas banks and financial services firms say are of great interest to them, according to a recent study by Cambridge, Mass., research firm CSC Index, Inc.

Information technology consulting.

The consulting industry is hot for two reasons: A lot of organizations are outsourcing their IS operations to firms such as the Big Six consultancies or Electronic Data Systems Corp., and "consultants are being used more and more in lieu of permanent employees," Kaplan explains. Companies are looking to save money by reducing their internal staff spending, he says.



"Our head of IS left the company, and rather than turn to an immediate replacement, we hired a consultant who took us through an analysis of where our systems strategy should go," says Richard Fitch, executive vice president of human re-

sources at California Federal Bank, based in Los Angeles.

Cal Fed eventually outsourced its entire IS operation to Systematics Corp., with Systematics eventually hiring 95% of the bank's IS staff, Fitch explains.

Salaries for IS managers in the consulting industry average \$58,500, while senior programmers average \$36,000, the survey reported.

Consulting firms seek systems professionals with experience working with open systems and client/server technologies, says Jennifer Paulett, area staffing specialist at CAP Gemini Sogeti USA in Akron, Ohio. Another way in the door is expertise in a niche area — particularly computer-aided software engineering (CASE), C++ or Unix, she says.

CAP Gemini recently hired several business analysts. A step up from consultants, business analysts are "people with experience working with clients helping solve their business problems," she says.

At Ernst & Young, mainstay employees are experienced in incorporating mainframe CASE tools in large-scale systems development projects using CICS and IBM's DB2, says Jerry Walls, assistant director for human resources. However, the firm recently began searching for people with client/server and object-oriented programming skills. Walls says Ernst & Young has been aggressively hiring for three years. In the past two months, it has hired more than two dozen consultants.

Because of the high level of interaction with clients, consultants need excellent communications skills, he adds. Team players with integrity are in demand in consulting.

"When we hire, we have immediate changeability and utilization. We do not hire people to be on the beach," Walls says.



Communications/Media. Have a penchant to work with Murphy Brown? Lucky for you, the area that encompasses media, broadcasting, cable television, multimedia and the distribution of electronic media is an up and comer for jobs, says Richard Wonder, national director of the IS division at search firm Robert Half International, Inc. in Menlo Park, Calif.

A case in point: Time Customer Service, Inc. in Tampa, Fla., a division of Time Warner, Inc., recently hired a dozen programmers, data processing director Bob Beckstead says. The firm is also looking for application developers, systems programmers and telecommunications people, he adds.

For his part, recruiter Kaplan recently placed an IS executive in the consumer products division at Walt Disney Co. in Anaheim, Calif., and a vice president of MIS at Buena Vista Home Video, a \$2 billion company that distributes Disney videotapes.

Communication businesses — from traditional media to cable TV — are fiercely technology-driven. They are always looking for new ways to use technology, such as videoconferencing and new electronic delivery services, to facilitate their form of communication, Wonder says.

"The new frontier in computing is bridging television, computing and telephone. Whether you call it multimedia or transputing, all companies that use computers from an end-user perspective — especially communications companies — will need software applications to utilize these integrated services," Wonder explains. The technical know-how for this area includes software application development, LAN protocols and the ability to create the bridges among devices, he adds.

The emerging technologies of greatest interest in this area are imaging systems, as well as fourth-generation languages (4GL) and end-user programming languages, according to the CSC Index report.

End-user languages and 4GLs are crucial to getting a better handle on using information for decision-making and quick development of systems to support the business, says Linda Peters, vice president at CSC Index in San Francisco. Leveraging information technology is especially important for publishing companies. "While publishing companies utilize highly advanced technology for printing, they have not historically used information technology in an advanced way" in business, Peters says.

The survey found that average pay for an IS manager in media is \$50,400 and \$28,000 for a senior programmer.

Distribution. In your heart of hearts you have been dreaming about working in the distribution industry. Not.

It may not seem glamorous or interesting at first, but the dissemination of products is do or die these days for almost every company, says Frederick Crawford, director of business development at Cleveland Consulting Associates in Ohio, which follows distribution companies. Practices such as just-in-time manufacturing and quick response, in which companies produce and ship products on demand rather than maintaining costly inventory, are heavily dependent on technology and technologists.

"Look at Wal-Mart. It doesn't sell anything someone else doesn't sell, and information technology, especially in its distribution area, is the bedrock of its success," Crawford says.

There is a lot of room for technical growth in companies whose main business is distribution. Today, 90% of these firms use large-system IBM mainframes running MVS, so the concentration on large-systems skills, such as MVS programming, is vital, Crawford says.

Ingram Micro, Inc., a \$2.5 billion computer hardware distributor and an IBM mainframe, high-volume transaction-processing shop, recently hired a manager for financial applications and two senior systems analysts, according to Senior Vice President Mike Kelly.

Crawford predicts that within 10 years the emphasis in distribution will be on open, client/server architectures, so skills will shift to workstations, PCs and AS/400 technologies.

Software companies. The software industry is growing. The Department of Commerce says the industry, which encompasses large and small systems software, will increase by \$14 billion by 1995. The companies hiring tend to be those with a diverse product range, says Lawrence Broe, senior associate for IS recruitment at Gary Kaplan & Associates.

"Companies with a broad client base and a broad product mix are doing very



well, whereas those that put all their resources behind one or two products are getting hit," Broe says. He points to large production software developers such as Candle Corp. and Computer Associates International, Inc. as examples of busy, diversified concerns.

Because it is diversifying its product mix and addressing client/server technologies, CA, for example, is looking for people with specific technical skills, according to Lisa Mars, senior vice president of human resources. Skills in demand are those related to C programming, Unix, DOS, OS/2 and Microsoft Corp.'s Windows.

Software firms tend to have a more technology-driven environment than user firms because technology is their business. At Candle, at least one-third of the entire staff has a technical background, says Linda Bennett, MIS director.

"IS professionals who work in the software industry can really speak the language of the business," recruiter Kaplan confirms.

An added bonus for the technology-minded is that staffers get to work with the latest products because software vendors often test packages in-house.

Because technology is what software companies do, technical professionals get a chance to diversify, according to Mars. "In our organization, people move around all the time. They may work in research and development one minute and product support the next, depending on need."



CA's typical career path starts out in quality assurance or testing, moves to product support and finally goes into development. Mars says developing new products is the company's highest level position. "Most technically oriented people here want to be out at the forefront," she adds.

Typical salaries in computer firms are \$68,000 for IS managers, \$51,500 for systems and programming managers, and \$36,000 for senior programmers. •

MANAGER'S JOURNAL

EXECUTIVE TRACK

The Federal Reserve Bank of New York has promoted Peter Smejkal to the post of manager in its operations systems department. Smejkal formerly served the same department as special projects director. The bank also named Sharon T. Wong, former projects director in the analytical systems department, as a manager in the operations and communications support department.



Karyn Thale is the new director of Technology Services at Christiansen & Fritsch, Inc.

A veteran of approximately a decade of technology firm marketing, Thale comes to the Portland, Ore.-based direct marketing agency from Microsoft Corp.

The Times-Mirror Co. in Los Angeles recently named Cecilia McRoskey as the first person to hold the newly minted position of vice president of information technology. McRoskey formerly held the top post at project management firm McRoskey Management Resources.



Veteran information systems executive **Jeffrey Landau** is the new vice president and chief information officer at National Media Corp., a television "infomercial" production company in Philadelphia. Prior to assuming the post, Landau held the same title at Nutri/System, Inc. He will be responsible for worldwide data processing, IS and telecommunications activities and is also charged with integrating National Media's current data processing systems with those of the firm's five subsidiaries.

Who's on the go?

When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Nell Margolis, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Muscle-stressed to IS: Get involved!

Ergonomic experts say IS should be part of the team fighting repetitive strain injuries

BY MITCH BETTS
CW STAFF

Walk into some offices and you will see computer monitors glaring like mirrors and desks with "secrretarial returns" too skinny to support the computer and keyboard. Control panels and modems are piled up so high that users must crane their necks just to look at the monitor.

If the ergonomic hazard potential is sticking out like a sore thumb, however, "the IS people are conspicuous by their absence," according to consultant Robert F. Bettendorf, president of the Institute for Office Ergonomics, Inc. in Manchester Center, Vt.

These days, ergonomic issues are handled by corporate safety and health departments or personnel departments, if at all. But experts in computer ergonomics argue that IS managers should be part of the ergonomics team that helps fight repetitive strain injury (RSI) and other ailments related to computer work.

Government figures show that RSI, in which muscles and nerves are traumatized by repetitious work done at awkward angles, is the fastest growing occupational hazard (see chart page 90). The incidence of RSI in service industries has climbed tenfold in five years.

For intensive keyboard users, including data entry clerks, reservation agents and newspaper editors, RSI usually results in numbness or shooting pains in the hands, wrists and arms. In severe cases, it can completely disable the arm. The RSI epidemic has also produced an outbreak of lawsuits

against computer manufacturers [CW, June 15].

"This is an issue that nobody wants to own, so it ends up in the safety and personnel departments," Bettendorf says. "But there should be a real teaming relationship with the IS department." After all, IS departments buy

partments could add ergonomic topics — such as posture and how to adjust chairs — to their usual bevy of personal computer training classes, he says.

One organization that is trying the interdepartmental team approach is the Library of Congress in Washington, D.C. Concerned about RSI among its intensive keyboard users, the library recently formed an ergonomics committee that includes representatives from the facilities management and IS departments.

The facilities management department "is really leading the effort because it's more a physical thing than it is a computer thing," says Herbert Becker, director of information technology services.

Providing employees with a well-designed VDT work area requires coordination between the IS manager, furniture buyer and facilities manager, experts say. For example, the IS manager and the furniture buyer need to match the size of the desk with the size and placement of the computer and keyboard, while the facilities manager should be consulted to ensure proper lighting for VDT work.

Ergonomists generally recommend a package of remedies that include monitors with

some sort of antiglare treatment, chairs and desks that are adjustable so arms and wrists are held at a comfortable level, user training, wrist rests and hourly breaks.

"Computer users should be told to take breaks — to stand up, stretch, look around — whenever they need them. Don't go heads-down for two hours," Bettendorf says.

Most employees forget to take a

Continued on page 90



Burton Morris

and install lots of the equipment and accessories that are suspect in RSI. IS managers "should have a big role to play when buying new equipment . . . and if they haven't got the knowledge, they should get some training," says David Parkinson, professor of occupational medicine at the State University of New York at Stony Brook.

IS involvement in the RSI issue need not stop with the purchase decision, Bettendorf adds. For instance, IS de-

RSI woes not always work-related

RSI is not new. Such injuries have been around for centuries, occur outside the workplace and have been known by such common names as "tennis elbow" and "writer's cramp."

It is not fair to automatically assume that RSI is job-related, according to ergonomics consultant Robert F. Bettendorf. "Off-the-job activities are every bit as important as on-the-job activities," he cautions. Knitting, tennis and piano playing could contribute to RSI.

"If someone is getting pain from using a keyboard, they should recognize that they can't go home and knit for four hours because that may well be a bigger problem than the keying," Bettendorf says. But arguments about what



is causing the injury should be put on hold while the RSI sufferer gets medical treatment from an expert in the field. Early intervention can prevent RSI from becoming a permanent disability, experts say.

David Parkinson, professor of occupational medicine at the State University of New York at Stony Brook, warns that many RSI cases are misdiagnosed as carpal tunnel syndrome, which involves compressed nerves in the wrist. That leads to unnecessary surgery, he says. "There have been an inordinate number of decompression operations for what has been called carpal tunnel syndrome, which have given no relief to the patients," Parkinson says.

MITCH BETTS

Banyan now offers two ways to get enterprise-wide networking.

Traditional.

For years, the world's largest enterprise networks have run on Banyan VINES.[®] Banyan is the leader in enterprise-wide PC networking.

Others try, but none can equal our ability to integrate PCs, minicomputers and mainframes.

This is because VINES was built for the enterprise—not the workgroup. Our enterprise network services are unified for a single system view, creating a network that is infinitely easier to use and manage.

In fact, independent research shows VINES is also the most cost-effective network.

Indeed, no matter how large your VINES network becomes, expense will always be held to the barest minimum.

This effortless expansion is made possible in part by StreetTalk,[®] the industry's best global directory, plus enterprise-wide services such as administration, security and messaging, which speeds and streamlines network tasks, making network managers far more productive.

Field-proven and perfected over nine years, VINES is a critical component of some of the world's largest computer networks. And is used by nearly two million eminently satisfied people.

For more information on Banyan VINES, call 1-800-828-2404.

Outrageous.

Are we really suggesting loyal NetWare[®] customers turn to Banyan to fulfill their dreams of enterprise-wide networking?

Absolutely!

Introducing ENS. You can have enterprise network capability for your 2.X, 3.X, and 4.X workgroups without disrupting your current environment or budget.

ENS from Banyan is not a network operating system. It's a powerful family of unified software products that will give users and managers immediate advantages:

1. StreetTalk. The best global naming and directory system available anywhere—the key to greatly simplified management and ease of use.
2. The ability to add users, access profiles, and security data all at once, across the entire network.
3. Single system integration of all NetWare users, regardless of network revision—no upgrades are necessary.

Outrageous, yes, but what potential! Products that will turn your NetWare workgroups into a true enterprise-wide network. A whole new class of network capability to increase your IS utilization, reduce costs and increase productivity. Don't commit to any upgrades until you have assessed ENS, the ultimate NetWare enhancement.

For more information on Banyan ENS, call 1-800-828-2404.



C A L E N D A R

OCT. 4-10

The New Tools for Design and Design Production Conference. New York, Oct. 4-6 — Contact: The Center for Computer Graphics for Design, Santa Fe, N.M. (505) 986-0523.

Repositary AD/Cycle International Users Group Conference. Chicago, Oct. 4-7 — Contact: Repository AD/Cycle Group, Santa Monica, Calif. (310) 394-8305.

Multivendor and Third Party Computer Maintenance Conference. San Francisco, Oct. 5-6 — Contact: Frost & Sullivan, Inc., New York, N.Y. (212) 233-1080.

Electronic Data Interchange Association (EDIA) Annual Conference. Nashville, Oct. 5-8 — Contact: Gregory Harter or William Myers, EDIA, Alexandria, Va. (703) 838-8042.

Scon-Tech '92. Anaheim, Calif., Oct. 5-8 — Contact: AIM USA, Pittsburgh, Pa. (412) 963-8588.

REXSYS Users Conference. Boston, Oct. 6-9 — Contact: Recovery Management, Inc., Littleton, Mass. (508) 486-8866.

Enterprise Computing Forum: Client Server '92. Houston, Oct. 7-8 — Contact: John Hendel, Champion Productions, Burnsville, Minn. (713) 225-1601.

OCT. 11-17

The Third Annual East/West High-Tech Forum. Prague, Oct. 11-14 — Contact: Edventure Holdings, Inc., New York, N.Y. (212) 758-3434.

Use, Inc.'s Fall Conference. Atlanta, Oct. 12-16 — Contact: Use, Inc., Lanham, Md. (301) 577-1881.

Europa Telecom '92. Budapest, Oct. 12-17 — Contact: International Telecommunication Union, Switzerland (011-41) 22-730-5926.

Enterprise Network Management Seminar. Elmsford, N.Y., Oct. 13-15 — Contact: Hart Rasmussen, Polytechnic University's Center for Advanced Technology in Telecommunications, Westchester, N.Y. (914) 347-6940.

Networld '92. Dallas, Oct. 13-15 — Contact: Kathy Ryan, Networld, Fort Lee, N.J. (201) 346-1400.

Multimedia World, Inc. Conference. Chicago, Oct. 13-16 — Contact: Jim Prude, Multimedia World, Alexandria, Va. (703) 684-5401.

Microprocessor Forum. Burlingame, Calif., Oct. 14-15 — Contact: Microprocessor Report, Sebastopol, Calif. (707) 823-4004.

DOD-STD Conference. Boston, Oct. 14-16 — Contact: David Maibor Associates, Inc., Needham, Mass. (617) 449-6554.

The National Association of Legal Vendors (NALV) Symposium. Newport Beach, Calif., Oct. 15-16 — Contact: NALV, Nashville, Tenn. (615) 726-3649.

OCT. 18-24

Info/Tech Management '92. Nashville, Oct. 18-21 — Contact: Data Processing Management Association, Park Ridge, Ill. (708) 825-8124.

Riscon '92 Conference and Exhibition. New Orleans, Oct. 18-21 — Contact: National Retail Federation Division, New York, N.Y. (212) 244-8780.

Society of Information Management (SIM) 1992 Annual Conference. Universal City, Calif., Oct. 18-21 — Contact: SIM, Chicago, Ill. (800) 477-4561.

APICS Conference and Exhibition. Montreal, Oct. 18-23 — Contact: The Educational Society for Resource Management, Falls Church, Va. (703) 237-8344.

Directions '92. Dallas, Oct. 19-22 — Contact: Cognos, Burlington, Mass. (617) 229-6600.

International Society for Hybrid Microelectronics '92. San Francisco, Oct. 19-22 — Contact: Terry Ritter, San Jose, Calif. (408) 945-9992.

OCT. 25-31

The 13th Annual Treasury Management Conference. San Diego, Oct. 25-28 — Contact: Treasury Management Association, Baltimore, Md. (301) 907-2862.

ASIS Annual Meeting. Pittsburgh, Oct. 26-29 — Con-

tact: Richard B. Hill, ASIS, Silver Spring, Md. (301) 495-0900.

Total Quality Management '92 Conference and Exhibits. Chicago, Oct. 27-28 — Contact: Pat Jones, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Outsourcing the Help Desk Conference. Colorado Springs, Oct. 27-30 — Contact: Help Desk Institute, Colorado Springs, Colo. (719) 531-5138.

Educam '92. Baltimore, Oct. 28-31 — Contact: National Trade Productions, Inc., Alexandria, Va. (703) 683-8500.

Expo Comm Chino. Beijing, Oct. 30-Nov. 4 — Contact: E. J. Krause & Associates, Inc. Bethesda, Md. (301) 986-7800.

NOV. 8-14

U.S. Society of Wang Users (USSWU). Boston, Nov. 9-13 — Contact: USSWU, Chicago, Ill. (708) 652-3888.

12th Annual Eastern American NCR/AT&T Computer Users Conference. Lake Harmony, Pa., Nov. 12-13 — Contact: Frank Whalon, Tinius Olsen Testing Machine Co. (215) 675-7104, Ext. 216.

Synergy '92. Anaheim, Calif., Nov. 9-13 — Contact: Weingarten Publications, Inc., Boston, Mass. (617) 542-0146.

NOV. 15-21

International Security Systems Symposium and Exhibition. Washington, D.C., Nov. 16-18 — Contact: Krause & Associates, Bethesda, Md. (301) 986-7800.

NOV. 29-DEC. 5

CAUSE '92. Dallas, Dec. 1-4 — Contact: CAUSE, Boulder, Colo. (303) 449-4430.

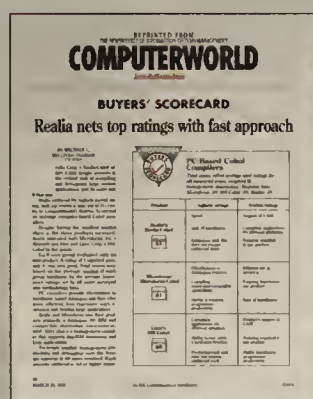
COMPUTERWORLD

EDITORIAL REPRINTS

Reprints from *Computerworld* provide a valuable marketing/sales tool for your company!

Editorial articles are available as reprints and can be ordered in various quantities, and customized to include your company logo and sales offices. Reprints* of Computerworld editorial, written specifically about your company or a subject of general interest can be a great communications tool for use in:

- Promotional/P.R. materials
- Internal meetings
- Internal newsletters
- Company seminars



- * Produced in minimum quantities of 500 for black-and-white and two-color reprints; 1,000 for four-color reprints.

For complete information on ordering reprints contact:

Reprints Department
Computerworld
375 Cochituate Road
Framingham, MA 01701-9171
Tel. (508) 879-0700
Fax. (508) 872-8564

THE NEWSPAPER OF INFORMATION SYSTEMS MANAGEMENT

ATTENTION
VARS!

Increase your sales!
Advertise 26 weeks in
Computerworld's new
VAR Directory.
Just \$499 for all 26 weeks.

Ad close: Nov 12

800-343-6474

x744

Muscle-stressed to IS: Get involved!

CONTINUED FROM PAGE 87

break when they are immersed in their work, but there is a new breed of memory-resident software programs that provide an on-screen reminder.

The software monitors the user's keyboard activity and issues a tickler if the user has not switched to some other activity for a period of, say, 10 minutes in every hour. Some packages even suggest stress-reducing exercises that can be done in the office.

Vendors of such products include Escape Ergonomics in Sunnyvale, Calif.; TVM Technologies, Inc. in Glen Cove, N.Y.; and Visionary Software, Inc. in Portland, Ore.

The real value in purchasing the rest-break software may be the message it sends to employees. "It's a message from management that 'We're serious. We want you to take breaks.' Otherwise, people don't really believe it," Bettendorf says.

Management attitudes and psychological factors such as job stress apparently play a role in RSI. A recent study by the National Institute for Occupational Safety and Health found RSI cropping up more among workers who fear losing their jobs, face increased work loads, lack job diver-

sity and are subjected to electronic performance monitoring.

IS executives involved in business process re-engineering projects should also be on the lookout for ways to redesign keyboard-intensive jobs and eliminate unnecessary tasks, Bettendorf adds, so that VDT work is less tedious and more productive.

On the the legal front, the only RSI lawsuit that has gone to trial so far was won by the employer. In December 1990, a federal court jury cleared Amtrak of charges that it failed to provide a safe workplace for an employee who blamed intensive keyboard work for her disabling RSI.

The employee, Debra Haririnia, alleged that Washington, D.C.-based Amtrak was negligent in failing to tell her how to avoid RSI. Haririnia sought \$825,000 in damages, but the jury ruled that Amtrak "provided a reasonably safe workplace and equipment"

and did not contribute to her injuries.

On the other hand, the advent of the Americans with Disabilities Act of 1990, which went into effect this past July 26, will make it more difficult for employers to ignore the RSI problem.

The act prohibits employers from discriminating against the disabled in hiring

and firing and includes RSI in its broad definition of a disability. "It will make it much more difficult to dump an employee with a long-term RSI disability," even if the disability makes it impossible for the employee to use a keyboard, according to David J. Eisen, director of research at The Newspaper Guild in Silver Spring, Md.

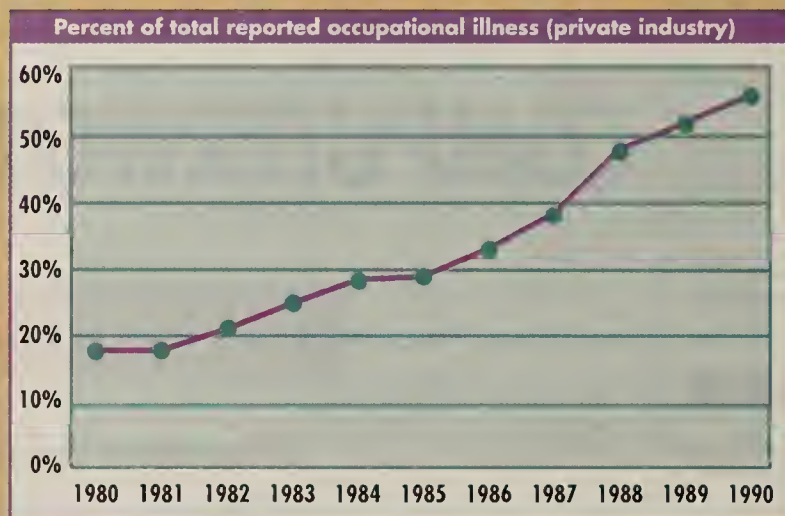
Furthermore, the act requires employers to make "reasonable accommodations for the physical or mental limitations of otherwise qualified persons . . . who can perform the essential functions of the job." For RSI sufferers, one possible accommodation would be voice-activated computers, Eisen said.

A few newspaper employees with RSI are using voice-activated computers to deal with the problem, he said, adding that it would be wise for employers to have several of the machines on hand for people with temporary RSI problems to use.

Although speech recognition products are slow and have limited vocabularies, Eisen said, voice-activated computers can be a "blessing" for RSI sufferers who otherwise could see their careers come to a painful end.

Over and over

Disorders associated with repeated trauma such as carpal tunnel syndrome steadily increased during the 1980s



Source: Bureau of Labor Statistics

INTELLIGENCE FILES



Items of interest from publications, speeches, surveys and research projects

Expert systems vs. complexity

■ Expert systems are being used by more businesses to handle complex transactions so that employees can concentrate on customer relations. American Express, for example, uses a rules-based "knowledge highway" system to manage credit transactions, from card applications to collecting overdue accounts.

Compaq Computer Corp. is using a case-based reasoning system to create a library of customer problems and solutions.

Someday, however, intelligent computers may go too far. Bankers, for example, are talking about using artificial intelligence to help sell financial products that are too sophisticated for their salesmen to comprehend.

Source: "White-collar computers," *The Economist*, Aug. 1, 1992.

Don't discard your ace

■ Managers of information technology are abrogating their responsibility and missing a great opportunity if they turn the job of setting the corporate technology agenda over to a consultant, researcher and consultant Gordon Hewitt says. "Traditionally, the road to the top

has not gone through the IT department, so senior executives are often uncomfortable with technology issues. This situation gives the IT manager a great opportunity to shape the thinking of the board," Hewitt says. "A board will profit from listening to its IT manager because IT has shifted from being a cost center concerned only with improving internal processes to a major source of competitive advantage."

Source: "IT Managers Step Up — to the Boardroom," by Peter Golden, *Beyond Computing*, August/September 1992.

Quality Police

■ How do you know when your quality initiative is going off track? One sure sign, says IS consultant Michael Hammer, is "when your company has a group within it that becomes known as 'The Quality Police.'"

Source: Remarks by Michael Hammer during the Q&A period at a management forum sponsored by Hammer & Co., June 1992.

Dancing with computers

■ "The thing I hated about computers was that you had to sit down to use them. (Actually, this has always been true of intellectual work.) How could you talk about human/machine interaction when all you could do was wiggle your fingers on a 100-year-old keyboard? Some interaction! I wanted to wiggle the rest of me. I wanted to use my whole body to interact with computers."

Source: Myron Kreuger, artist, scientist and pioneering explorer of artificial reality, in an interview with Jas. Morgan for the fall issue of *Mondo* 2000.

Motivating the ranks

■ DEC's designated President Robert Palmer knows how to motivate, according to one of his senior managers. "In the first staff meeting I went to, he told the group, 'I need information to make deci-

sions. If I don't get it, I still need to make them. You can either participate, or I'll work around you.'"

Source: "Digital: The Next Generation," by Glenn Rifkin, *Upside magazine*, September 1992.

'Where's the beef?'

■ I bet Dave's daughter Wendy inspired him to move toward putting PCs in all of his new restaurants. David Thomas, chairman of Wendy's International, Inc., is pushing technology to get managers away from administrative back-office tasks and out front managing. "That's where technology can help us — not to replace someone, but to get managers out into the restaurant."

Source: "You need a mop-bucket attitude," *Interview by Profit magazine*, July/August 1992.

Learning curve

■ The time it takes an employee to get "up to speed" can cost managers time and money in a project. "CPM Bulletin" says up-to-speed learning is pronounced in white-collar projects such as software development.

In all projects, but particularly in complex ones such as software development, most participants spend much of their first few weeks familiarizing themselves with the project. During this time, they are usually only working at 60% of their potential. It can take six weeks before they reach 100% productivity. Delays can be minimized by limiting the number of new people introduced after the initial stage of such projects.

Source: "Up to Speed: The Cost of Learning on an 'Ideally Planned' White-Collar Project," *CPM Bulletin*, Summer 1992.

Compiled by Kelly E. Dwyer, assistant editor, features, with contributions from Mitch Betts, national correspondent; Nell Margolis, senior editor, management; and Joanne Kelleher, features editor.

1992 Software Engineering Research Forum

Putting it all together: People, Process, and Technology

Who should attend: Managers, Practitioners, Educators, or Researchers involved in Software Engineering

The SERF-92 meeting will be focused on educational program development, software engineering research, and software engineering practices among educational institutions, industries, and governmental agencies.

The conference theme involves the proper integration of these elements, in different ways and with different emphasis to provide a key to success in areas from information systems to real-time systems.

Attendees will leave with information that will enhance their organization's technology growth.



Mail conference registration request on letterhead, along with payment to: SERF '92

c/o Frank VanLangen
Gruman Melbourne Systems
P.O. Box 9650
Melbourne, FL 32902-9650
(407) 951-5029

Conference registration: \$175 before 10/16 • \$250 after 10/16 • \$75 Student
When and Where: SERF-92 - November 5-6, 1992 • Holiday Inn Ocean Front Melbourne, Florida • Hotel reservations: (407) 777-4100 • \$55/night

A few important tips on recruiting computer professionals

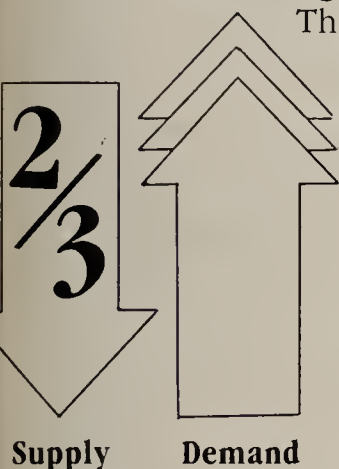
Finding computer talent isn't as easy as it used to be. In fact, there was a time when you'd just run an ad in the local newspaper and you could make a hire without waiting too long or spending too much.

But times have changed. And like so many facets of today's business, so has the effectiveness of traditional recruiting methods.

What's more, many of today's recruiters *don't use* today's most efficient methods — methods that save time and money for some widely unknown reasons.

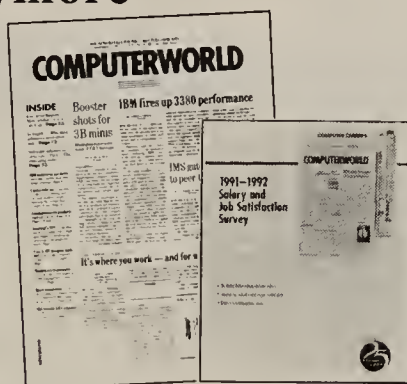
The supply of qualified professionals isn't meeting demand

The American Council on Education reports that the number of college students choosing computer careers is down two-thirds since 1982. To make matters worse, there are more computers in today's business that require the skills of this shrinking market than ever before. And while you may never consider the company next door your competitor, it likely *is* competing for the same computer talent today. The result is a classic supply/demand problem that isn't changing for the better — and that's sure to make your recruiting tougher in the '90s.



Ads in local papers don't reach your major hiring market anymore

That's because they generally reach "active" job seekers — those who actively seek out the local newspaper to find jobs — and who a recent *Computerworld* job satisfaction survey found to represent 2 in 10 of today's computer professionals. The study also found that 7 in 10 of today's computer professionals are "passive" job seekers — those who



would *consider* new job options, but likely never look for them in the local newspaper. (The remaining small percentage are "non-movers" content with long-term jobs.)

In short, this means that your ad in today's local newspaper reaches no more than 20 percent of today's computer job seekers. What's worse, if you're not using other vehicles that

reach far more job seekers, your local newspaper expenses are as inefficient as their limited audience.

More job seekers see your ad in Computerworld than in any other newspaper — Sunday, daily, or trade

That's because *Computerworld* reaches over 629,000 qualified computer professionals every week — the largest audience of its kind, and one that's rich with passive and active job seekers.

That's why more companies advertise more jobs in *Computerworld* than in any other professional newspaper. And why *Computerworld* is the *single place* where America's computer professionals *expect* to see the most jobs every week.

Computerworld gives you regional editions

A key option when you need a regional candidate and want to avoid national response and relocation. Yet if your search is national in scope, *Computerworld* can also give you more widespread national exposure than any other source.

Regional Editions

National Editions

Computerworld needs just 2 working days for your ad to appear

That's comparable to most local newspapers. And why your ad can quickly appear in the next issue to start generating quality response.

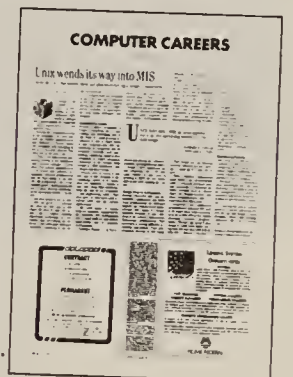
Computerworld costs no more than local papers

And with a regional rate of just \$182.95 per inch, your cost-per-qualified candidate reached is better than any newspaper — Sunday, daily or trade. Or just about any other source, for that matter.

Computerworld leads candidates to your ad

Just look at this week's Computer Careers section. You'll find a career editorial topic that will stir the interest of virtually any computer job seeker — passive or active. It's just one of countless reasons *Computerworld* is America's newspaper of choice on computing. No matter how much the times change.

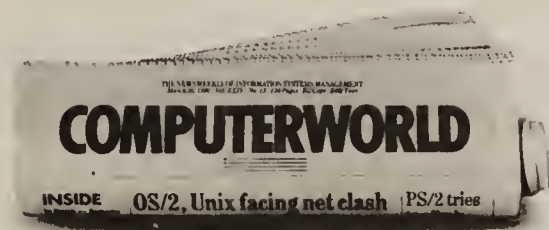
And while times may change, some things won't. Whether you *use* computers, *make* computers, or *sell* products and services for computers, *Computerworld* is still your major source of news today. And your major source of computer professionals tomorrow.



For more recruiting tips, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

For every 10 of today's computer job seekers . . .	
2 are Active	<input type="checkbox"/> <input type="checkbox"/>
7 are Passive	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1 is a Non-mover	<input type="checkbox"/>

NOW
REGIONAL



RECRUITS
THE BEST!

RECRUITMENT ADVERTISING

Where the qualified candidates look. Every week.

1-800-343-6474 x201

375 Cochituate Rd, Framingham, MA 01701, Fax 1-508-875-3202

**Weekly. Regional. National.
And it works.**

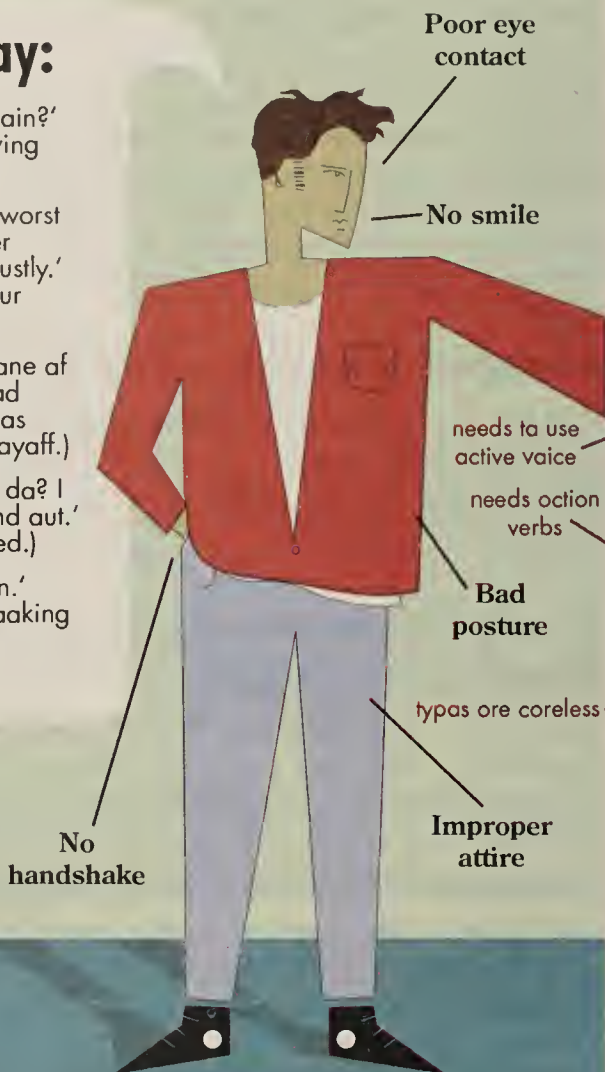
COMPUTER CAREERS

How to improve your employability

Avoid these mistakes and . . .

What not to say:

- ▶ 'What was the question again?' (Sounds like you're not paying attention.)
- ▶ 'My last company was the worst place to work. My manager treated employees very unjustly.' (Gives the impression of sour grapes.)
- ▶ 'I never should have been one of the people cut. I was a good employee.' (Comes across as bitter or negative about a layoff.)
- ▶ 'What does your company do? I haven't had a chance to find out.' (Makes you look unprepared.)
- ▶ 'I prefer to work on my own.' (Most IS departments are looking for team players and good communicators.)



Joe Jones

Experienced in all aspects of whole life cycle projects ranging from design of systems, coding and testing of software to acceptance and user support. I have trained programmers and users how to use software and products.

Hardware: 30XX, 9370

Software: MVS/XA, JCL, ISPF, VM/CMS, VSAM, CICS, Interlist, File-Aid, CA-Datcom, ADF

Languages: Cobol, Cobol II, BAL, C

EXPERIENCE:

Contract programmer/Analyst 11/88-Present
Designed, coded and maintained Cobol CICS and batch report programs under MVS. Applications included nuclear power plant facilities, management systems, inventory control, security, purchasing, work orders, time accounting and entertainment industry applications. Clients included Motion Pictures International and Pacific Power.

Institutional Software, Inc., San Luis Obispo, Calif. 7/87-11/88

Senior systems analyst
Project manager for a Cobol conversion from Hewlett-Packard to CICS on IBM. Responsibilities included designing major portions of the system, converting and creating new Cobol programs, installing the product under MVS/XA and writing utilities for VM/CMS. Installed and maintained IBM 9370 and third-party software on it. Established and maintained project schedules, responsible for the project meeting deadlines.

California Computer Corp., San Francisco, Calif. 4/84-7/87

Systems engineer
Field support for VM/CMS-compatible minicomputer. Maintained hardware and software for customers. Hardware and software problem analysis and resolution. Trained customers how to use the machine. Supported salesmen during presales activities such as giving demonstrations and presentations.

American Bancorp., San Francisco, Calif. 8/81-4/84

Systems analyst
Technical support to users. Consulted with users on design, development and implementation of programs and systems. Software support.

Data Systems, Inc., San Francisco, Calif. 3/78-8/81

Operator/Programmer analyst
Technical support to users. Debugged customers' programs. Troubleshot telecommunication problems. Operated a Cyber 6400 computer.

EDUCATION:

Computer Learning Center, Los Angeles, Calif. 1978
Completed courses in Cobol, RPG, BAL, JCL, systems analysis and design.

Cuesta College, San Luis Obispo, Calif. 1989

Completed course in C programming language.

The right image
(next page)

AS400 SYNON RPGIII

AGS, a NYNEX® Company, employs over 2,500 computer professionals in 50 offices throughout this country, Canada and England. As one of this country's most successful leaders in the development of information solutions, AGS utilizes the latest in software technology and services the most recognized names in computer manufacturing, telecommunications, financial services, consumer products, and government.

AGS has immediate opportunities in our Atlanta office for data processing professionals with experience in the design and implementation of information solutions using AS/400, SYNON & RPGIII.

If you are interested in joining a fast-growing, highly visible team of professionals, please call or mail your resume to:



A NYNEX Company

An Equal Opportunity Employer M/F/H/V

National Resources Manager
AGS Information Services, Inc.
1139 Spruce Drive
Mountainside, NJ 07092
Tel.: 1-800-HIRE-AGS

DATA PROCESSING CONSULTING

(Research Programmer)
Administrative Information Systems and Services
University of Illinois

Administrative Information Systems and Services has an opening for data processing consulting at the Chicago campus. This is an outstanding opportunity for an experienced consultant to join a progressive, state of the art computer organization to confer with customers of the Client Support Services function. (This position carries the academic professional title of Research Programmer).

Responsibilities include:

- Automate and integrate office computer systems from desktop intelligent workstations to mainframes
- Be a liaison with vendors
- Analyze needs of campus community for the office systems requirements

B.S. required and 2 years minimum experience with high level project management experience, demonstrated skill in interfacing all levels of clients. Preference will be given to M.S. and 8 years experience. Requires working knowledge and experience in:

LANS: Token Ring or Ethernet. LAN Administration: 3 COM, LAN Manager, or Netware. Microsoft Windows: Extra!, Excel, and Word Perfect. SQL Servers: Microsoft, Oracle, or Gupta. Hardware: Apple Macintosh and IBM PS/2 (or other 386). Business analysis skills.

Please submit letter of application, resume and three letters of references no later than October 23, 1992 to: L. Maxine Hayden, Assistant Director, Administrative Information Systems and Services, 911 South Sixth Street, Champaign, Illinois 61820

The University of Illinois is an
Affirmative Action/Equal Opportunity Employer.

CONTRACT PROGRAMMERS

OUT OF STATE RATES UP TO \$50 PER HR

Openings in MI, WI, IN, IL, CA, OH, AL, MO and NC

NOMAD* OS/2 CICS/DB2* PRIME 9000 FOCUS ORACLE	IMS/DB/DC AS400 DEC, VAX, RDB ADABAS INGRES C P/C, UNIX	SQL/DS/AS* PS/2 AFP, HOGAN PACBAS SAS* SQL FORMS	ADF or APS IDMS/ADS/O CORVISION, CASE NAT, 2.0, DB2 INFORMIX C LANGUAGE
--	--	---	--

*Out of state Contract To Hire positions available.

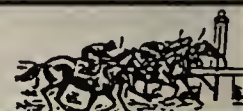
J.P.S. INC

P.O. Box 690007, Houston, TX 77269

(713) 370-8019 Toll Free (800) 633-0391 FAX (713) 370-8021

No trainees or part-time positions. Equal Opportunity Employer

FOR WINNERS ONLY!



SOUTHEAST OPPORTUNITIES

Technology Consulting, Inc. is a dynamic and rapidly growing Software Development Company with challenging assignments. Our immediate and continuing needs are:

CERTIFIED NOVELL EXPERTS

- | | | |
|---------------------|---------|------------------|
| • FOCUS | • DB2 | • AS/400 |
| • CSP | • OS/2 | • DEC/VAX ORACLE |
| • IMS DB/DC | • CICS | • ADABAS/NATURAL |
| • ADW/IEW | • C/C++ | • MANTIS/SUPRA |
| • OFFICE AUTOMATION | | |

TCI offers competitive salaries, attractive benefits, and relocation assistance. For consideration, send resume or call:



1800 Meidinger Tower
Louisville, KY 40202
(502) 589-3110
FAX (502) 589-3107

IEF CONSULTANTS

(BAA, BSD, TD, CONSTRUCTION, GUI, RAD)

Nationally established client base with long term assignments (6 months - 3 years), Business Process Re-design & Quick Win (RAD), Image Processing, Outsourcing.

Fax resume or call

CHRISTOPHER LOGAN/BRITTON

9330 LBJ #900
Dallas, TX 75243
1-800-362-4351
FAX 214-437-9663

3300 So. Gessner #150
Houston, TX 77063
1-800-362-4352
FAX 713-266-0263

POSITION IN SAUDI ARABIA

Manager MIS/Information Technology

We are looking for a dynamic professional (Arabic speaking) to take charge of setting up new directions and state of the art technology transfer for the largest Office Automation Group in Saudi Arabia.

The selected professional will be responsible for migrating the Group's Wang VS based MIS operation into the Unix/RDBMS based Open System environment along with the re-engineering of the existing systems to finally develop a flexible Decision Support System, for all the Group's activities.

For this responsibility you must have an in-depth knowledge and experience in the area of Open Systems, Distributed Processing, Client-Server Architectures, CASE and SSADM tools.

Systems development and applications experience in the Financial Warehousing, Distribution, Sales and Marketing areas is strongly preferred.

Please send your resume by FAX to: Riyadh, Saudi Arabia Attention: Executive Vice President Fax No. 966-1-462-5171

APPLICATIONS DEVELOPMENT MANAGER

Opportunities available with Jacksonville, FL based firm. The successful candidate will be responsible for overall development of enterprise wide business applications. To qualify for this position you must have:

- A proven track record in managing the development of enterprise wide applications in a commercial environment using structured development methodologies including process and data modeling.
- Recent experience in analysis, design and programming of client/server based applications using relational database technology and graphical user interactive front-ends.
- Strong leadership and interpersonal skills.
- Experience using CASE tools and Object Oriented techniques.
- Excellent verbal and written communications skills.

Other Opportunities Exist For: Programmers and Analysts

Experienced in this environment. Experience using C, Windows, and SYBASE is a definite plus.

If you qualify for one of these positions, please send your resume in confidence to: CW-91539 Computerworld, Box 9171, Framingham MA 01701-9171

Sunbelt Opportunities

CASE Tools Anal's 40-55K
IBM PC/C Prog/Anal's 30-36K
IMS DB/DC Prog/Anal's 30-37K
MSA or M&D Anal's 35-49K
IDMS-ADSO Prog/Anal's 30-39K
ACPT/PPF Prog/Anal's 38-48K
EDI Prog/Anal's 33-43K
HOGAN Prog/Anal's 35-50K
DB2/CICS Prog/Anal's 33-40K
AS/400 Prog/Anal's 30-39K
TANDEM Prog/Anal's 33-44K

North Carolina's largest employment agency, in business since 1975, 300 affiliates. Opportunities in the Southeast and nationwide. Fee paid.

CORPORATE PERSONNEL
3705-320 Lattrobe Drive, Box 221739
Charlotte, NC 28222 (704) 366-1800
Attn: Rick Young, C.P.C.

SALARIED POSITIONS WITH CLIENT COMPANIES & THRU AFFILIATES NATIONALLY

\$30,000-\$65,000

- Networks • GUIs/windows
- CASE tools • Relational DBs
- Open Systems • Connectivity
- Imaging • Oper. Sys. • OSP • AI

Contact Howard Levin
RSVP SERVICES
P.O. Box 8369
Cherry Hill, NJ 08002-0369
(800) 222-0153
FAX: (609) 667-2606
Placing professionals since 1966

SMALLTALK

C++

Professionals Needed
IMMEDIATE OPENINGS!!
Houston, Texas
Min 3 Yrs. Experience

Rothwell International

Box 270566
Houston, TX 77277
800 256-0541
VOICE (713) 541-0100
FAX (713) 541-1167

HOGAN & AS/400

30+ Openings

• NATIONWIDE •
PLACEMENT & CONTRACTS
Programmers & Consultants

Submit resume/call
TEL: (818) 222-1266
FAX: (818) 222-1267

SUPERIOR RESOURCES, INC.
23679 Calabasas Road, #312
Calabasas, CA 91302

* Member N.C.A. *

Great Consulting Assignments and Full Time Opportunities nationally.

Please send resume & call:

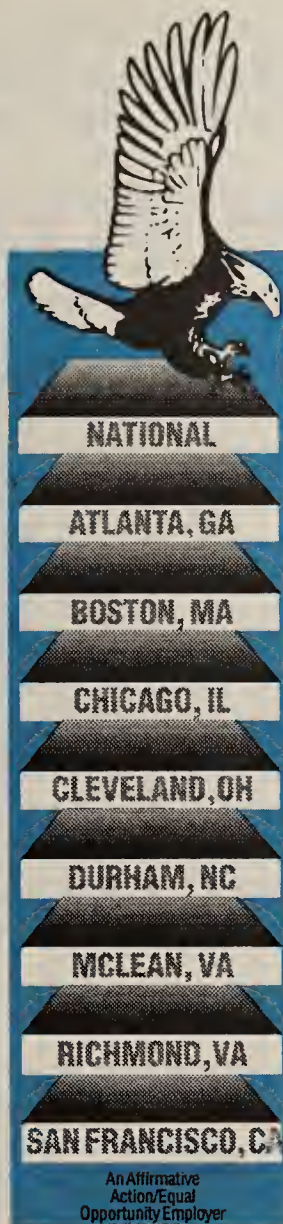
MIMI Simon Assoc

90 West St. Suite 1105, NYC 10006

(212) 406-1705
FAX (212) 406-1768

Special! Portland, OR Assignments:

- VAX, BASIC to CICS/COBOL conv'n
- QA on UNIX Platform



SOFTWARE CONSULTANTS

We're The Registry a dynamic, rapidly growing Software Consulting Company with unique and highly challenging assignments for both Software Engineers and MIS programmers at all levels of experience.

NATIONAL	ATLANTA, GA	BOSTON, MA
MUMPS P/A MAC / C++ 3GL / VAX / CLINICAL IDMS / ADSO ORACLE CASE VAX/SQL/COBOL FORTRAN	IBM / ASM / CICS MS-WINDOWS/SDK COBOL / RDB UNIX / C / SQL PROGRESS ORACLE or INGRES	DEC VOICE CA - EXPERT AS400 / RPG III DB2 / TELON POWERBUILDER REVELATION
Contact: Sue (800) 248-9119 FAX: (617) 237-0723	Contact: Jeff (800) 255-9119 FAX: (404) 257-0566	Contact: Meredith (800) 248-9119 FAX: (617) 237-0723
CHICAGO, IL	CLEVELAND, OH	DURHAM, NC
SCSI / UNIX MAC APP / MPW POWERBUILDER ORACLE CASE 5.0 CASE TECHNOLOGY FLASHPOINT	MOD 204 IMS DB / DC INFORMIX / UNIX / C BSEE/C++ HOGAN CICS / DB2	HP 3000 IMAGE UNIX / C / ORACLE VM/CMS FORTRAN UNIX/C++/OPENLOOK IMS DB / DC / COBOL VSE/ADABAS/NATURAL
Contact: Chris (800) 677-9119 FAX: (312) 558-1388	Contact: Chuck (216) 328-9900 FAX: (216) 328-9338	Contact: Chris Blair (800) 338-9119 FAX: (919) 544-9668
MCLEAN, VA	RICHMOND, VA	SAN FRANCISCO, CA
SAS ORACLE FINANCIALS MS - WINDOWS MUMPS SYBASE VMS / C	ADA ORACLE FINANCIALS SYBASE CLIPPER / R&R MUMPS VMS / C	ORACLE / FORMS 2.3 PRIMOS SYS PROG OS2 / PM / C C++ / X-WINDOWS / LEXX ULTRIX SYS MGR MS-WINDOWS / C++
Contact: Bill (800) 367-9119 FAX: (703) 790-8467	Contact: Susan (804) 747-1000 FAX: (804) 346-0510	Contact: Mike (800) 248-9119 FAX: (617) 237-0723

The Registry

Member NACCB

FLORIDA

Sybase, "C", APT 48K
HP3000, COBOL 40K
VAX/VMS, COBOL, DCL 39K
Tandem, COBOL, TAL 50K
C++, UNIX, MOTIF 46K
CASE, Sybase, MS/Win 50K
MICROFOCUS COBOL 36K
ASSEM, COBOL, CICS 42K
IMS DB/DC, COBOL, DB2 36K
"C", UNIX, INFORMIX 40K
HP, Speedware, COBOL 40K
AS400, RPG, COBOL 38K
M&D, G/L, A/P 40K
ORACLE 6.0, FORMS 3.0 42K
GIS 36K
IDMS, ADSO, FOCUS 40K
ADA, FORTRAN 39K
OS/2, CC Mail 39K
DISOSS, OV400 44K

COMPUTER BUSINESS ASSOC.

TAMPA:
500 N. Westshore Blvd
Tampa, Florida 33609
(813) 287-2100
FAX (813) 287-2954

ORLANDO:
102 Spring Lake Lane
Altamonte Springs
Florida 32714
(407) 788-8696
FAX (407) 788-8867

Data Processing

DO YOU WANT TO SUCCEED IN INFORMATION SYSTEMS CONSULTING?

If So We Are Seeking
QUALITY PROFESSIONALS
For
QUALITY PROJECTS

If you possess a minimum of 3 years experience in

- CLIENT SERVER
- SYBASE

Then come see what a true consulting firm can do for you.

WORK HARD AND BE REWARDED FOR IT!

Call or send your resume to:

LOGICA, INC.

17535 Rosbough Drive Suite 103
Middleburg Heights, OH 44130
Attention: George Palton
216-234-8446
216-234-7345 Fax

An Ohio Based Company

Our list of problems (challenges) keeps growing.

BUSINESS SOFTWARE PROFESSIONALS

AS/400 RPG or COBOL	LAN ADMINISTRATORS
CASE TOOLS EXPERIENCE	M&D MILLENNIUM
CICS	NATURAL 2
DB2	NOVELL CNE
END-USER SUPPORT/HELP DESK	ORACLE
FOXPRO	OS/2 DEVELOPERS
HP POWERHOUSE	PROGRESS
HP COBOL	SYNON
IDMS DBA	TECHNICAL WRITERS
IMS DB/DC	TELON
IDMS-R	WINDOWS DEVELOPERS
INGRES	

SOFTWARE ENGINEERS

MS WINDOWS DEVELOPMENT,
C++ in a REALTIME environment with EMBEDDED PROCESSORS
C, SUN, UNIX and SOFTWARE DIAGNOSTICS

And we couldn't be happier.

Every year, CPU attracts more and more of Wisconsin's leading companies as clients. And these companies present us with substantial challenges in meeting their information system needs. These challenges translate into exciting careers for our team of forward thinking software professionals. And all of this makes us extremely happy.

If you're ready to tackle the kind of technical challenges you were meant to handle, then call Bill Rudd, Joyce Mosaic or Julie Endlich at 414-225-4000, or call 1-800-527-8462 for Milwaukee, Madison, Appleton or Green Bay positions. You may also send your resume in confidence to: CPU, Dept. CW-0921, 732 N. Jackson St., Milwaukee, WI 53202. Fax: 414-225-4011. Sorry, no entry-level positions are available. We are an equal opportunity employer.

CPU

COMPUTER PEOPLE UNLIMITED INC.

FLORIDA... OPPORTUNITIES WILL NEVER BE BETTER

ORACLE VMS, UNIX, or MVS
TANDEM Cobol, Scobol, Pathway
Tal, C, Unix

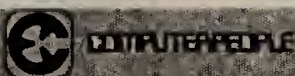
CASE TOOLS IEF, IEW Construction
IBM MAINFRAME DB2, CICS, VSAM

UNIX C, X-Windows, GUI
C, INFORMIX, SQL

WE SET THE STANDARD OF EXCELLENCE
In Florida and now nationwide. Offering both Permanent Placement and Consulting opportunities.

COMPUTERPEOPLE, Dept. 525

3265 Meridian Parkway Suite 122 Ft. Lauderdale, FL 33331 305-384-0999 1-800-777-8603 *Serving South Florida & Jacksonville*	12225 28th St. N. St. Petersburg, FL 33716 813-573-2626 1-800-329-2626 Fax 572-1153 *Serving the Tampa Bay area*	20 North Orange Ave. Suite 1400 Orlando, FL 32801 407-236-9706 1-800-299-9953 *Serving Orlando*
--	---	--



C++ Windows OOD

Gain access to advanced SW technology. C++, X Windows, widgets, toolkits. Sun, NeXT, RS/6000 workstations. Apply your object expertise on Wall Street or even the Space Station. Nationwide!

AS/400 Synon

We have information on over 10,000 AS/400 sites. 1+ yr. RPGIII exp. reqd. Manufacturing, financial, retail & distribution applications. Now is the time to use our contacts to advance your career!

Pick Your Location
Paul Morris Personnel 800-220-1044

Computerworld/Corptech Career Index

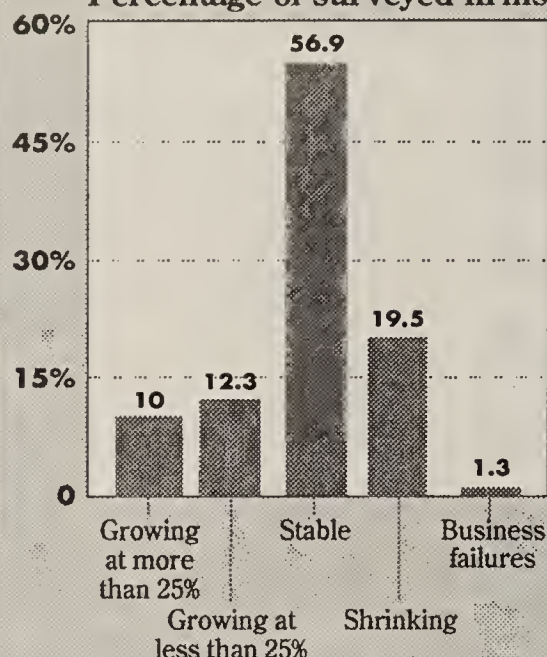
SUBASSEMBLIES AND COMPONENTS - The New York Metro region took a substantial employment plunge in this industry while those regions hiring had only modest gains

Overall
growth
rate

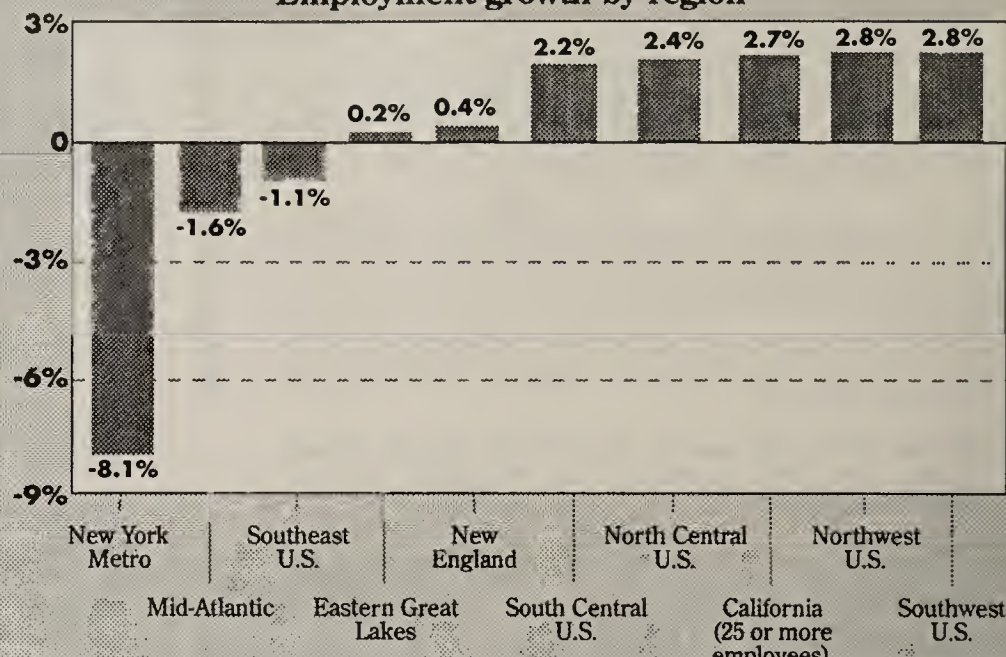
0.1%

© Copyright 1992,
Corporate Technology
Information Services, Inc.,
Woburn, Mass.

Percentage of surveyed firms



Employment growth by region



SOFTWARE ENGINEERS and IT PROFESSIONALS

JOIN THE **BEST** IN SEATTLE!

There are many consulting companies, but only one is **BEST**! If you truly want to make a professional difference and be more than an employee, then take advantage of this unique opportunity. Join the elite at **BEST Consulting**, a Seattle firm committed to being the premier provider of DP solutions and careers. Our firm continues to experience rapid growth! We have hired over 50 employees in Seattle this year and continue to enjoy the luxury of more assignments than we have qualified Software Engineers and IT Professionals to fill. We have immediate openings for experienced Software Engineers and IT Professionals to work with leading edge development.

Skills needed include:

- Sybase, SQL Server, Oracle, Ingres, Gupta
- C, C++
- WINDOWS SDK or X-WINDOWS
- VisualBasic • Powerbuilder

Additional skills needed include:

- Systematics (all applications)
- AS400 with COBOL or RPG400
- PEP+

Competitive salaries, benefits, potential equity and the Great Northwest lifestyle offered. If you do not call or send a resume, you may miss the career opportunity of a lifetime.

BEST Consulting

1940 116th Avenue N.E. • Bellevue, WA 98004
(206) 637-0130 (206) 637-9550 FAX

ATLANTA, CITY OF OPPORTUNITY

DCG has established itself as an industry leader providing MIS consulting services. We currently have in excess of 40 openings for professionals with 2+ years experience:

- Paradox, PAL
- C, CASEWORKS
- AS400, SYNON
- OS2, PM, C
- UNIX, INFORMIX
- AS400, J.D. Edwards
- McCormack & Dodge Millennium
- CICS, COPS, OS/MVS

DRACS Consulting Group, Inc.

3343 Peachtree Road, NE
Suite 1230, East Tower
Atlanta, GA 30326
(800) 727-1184 or (404) 262-1184 FAX (404) 262-3994
ATTN: Anne Perreyclear

COMPUTER PROGRAMMER/ANALYST

Design, develop and debug customized on-line distribution transaction processing software applications for use on IBM mainframe computer, including use of optimized database access code. Design, develop and debug server and communications program on DEC/Vax minicomputers which interface on a peer to peer basis with the IBM on-line applications, including process concurrency and communication, scheduling, memory management, and distributed systems. Develop comprehensive technical documentation for the software described above. Computer hardware used includes IBM mainframe and DEC/Vax minicomputers. Computer operating systems used include: Virtual Memory System; Multiple Virtual Storage; and Customer Information Control System using Advanced Program to Program Communication and IBM System's Network Architecture Logical Unit 6.2 communication protocol. Computer languages and software used include: PDP 11 or Vax 11 Assembly Language; Job Control Language; Structure Query Language; COBOL; DB2; and PL/I. 40 hour work week; 8am - 5pm. Yearly salary: \$41,500. Master's degree in Applied Computer Science required and 6 months of experience in job offered or 6 months as University Graduate Assistant, Computer Consulting required. Other special requirements: Experience or education to include use of all computer hardware, operating systems, languages and software listed above, as well as process concurrency and communication, scheduling, memory management, and distributed systems. One college level class each in: Technical Writing; On-Line Programming; and Data Communications. Will accept completion of all course work towards Masters degree in lieu of actual degree. Must have proof of legal authority to work permanently in the U.S. Send two resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 S. State Street - 3 South, Chicago, Illinois 60605, Attention: JEAN WOODSON, Reference #V-IL 5732-W. 2 copies of your resume required. NO CALLS. AN EMPLOYER PAID AD.

Research Analyst/Aircraft Scheduling to design & implement a networked, multi-user decision support system application for aircraft scheduling using a graphical user interface; develop computer models applying operations research techniques to solve complex scheduling problems of routing aircraft; achieve required criteria using object-oriented programming techniques; implement a system for submitting requests to remote DOS & UNIX workstations to run complex mathematical models; utilize image processing techniques to display & edit aircraft-gate assignments; apply concepts of artificial intelligence & neural network methodology to develop mathematical models for aircraft scheduling & passenger demand forecasting; plan, install & support a LAN system for aircraft scheduling which links multiple DOS & UNIX workstations. Master of Science degree in Systems Engineering required as well as 1 year of experience in job offered or 1 year of experience as Software Engineer and/or Systems Engineer and/or Research Assistant or any combination thereof. Will accept applicants with Masters degree in one of the following areas: Industrial Engineering & Operations Research; Operations Research; or Transportation Systems. Applicants must have completed 1 course in each of the following: linear & integer programming; operations research; systems design or software engineering; expert systems; numerical analysis; parallel processing. Coursework or experience must have included object-oriented programming as well as design & development of networked multi-user applications, databases & expert systems, image processing & use of neural network methodology in mathematical modeling. 40 hrs. M/F, 9 a.m. to 5 p.m., \$39,000 per annum. Must have proof of legal authority to work permanently in the U.S. Send 2 copies of resume, degree certificate and transcripts to Illinois Department of Employment Security, 401 S. State - 3 South, Chicago, IL 60605, Attn: Len Boksa, Ref. No. #V-IL-5919-B. NO CALLS. AN EMPLOYER PAID AD.

TANDEM

COBOL, PATHWAY, TAL, SCOBOL, C, SQL, X.25

STRATUS

PL1, COBOL, C, ON/2

MUMPS

DSM, ISM, MSM, GTM, IBM RISC/6000 M-SQL Fulltime/Consulting Positions available in the US/ABROAD

STRATEM

800-582-JOBS
TEL (212) 967-2910
FAX (212) 967-4205
124 W. 30th St. Suite #302
New York, N.Y. 10001

Call today
to place your
recruitment ad.

800-343-6474

(in MA, 508/879-0700)

Programmer-Analyst - 40 hours/week; 9:00 a.m. - 5:00 p.m.; \$26,800/year. Job requires: 4 yrs. of college study in major field of computer science or engineering & 2 yrs. experience in job offered or Software Engineer. Job also requires: Of 2 yrs. required in job offered or related occupation, must have 1 yr. demonstrated experience in developing accounting, manufacturing & distribution application systems programs. Working knowledge of UNIX, Informix, UNIFY, C & COBOL environments necessary. Academic background must include at least 15 credits in computer science courses including programming, logic design, data structures & mini microsystems (or equivalents to those courses). Job duties: Analyze commercial software programs for improved use in accounting, manufacturing & distribution applications. Design, develop, enhance new efficient software programs & integrate systems based on user needs. Using UNIX, Informix, UNIFY, C & COBOL, devise new or enhanced plans through structured analysis & design. Determine accurate cost & time estimates. Prepare corresponding instructive diagrams, set up databases, direct implementation of design specifications. Provide technical help, review systems operation & revise design & application deficiencies. Qualified applicants should send resume and verification of requirements to Mr. Phil Baril, Job Order No. FL0675746, Job Service of Florida, 3421 Lawton Road, Orlando, Florida 32803. Employer paid ad.

CONSULTANTS/FT

CICS/DB2/CSP FOCUS

Adabas/Natural

(bilingual Chinese & +)

PARADOX . SYBASE

COMMANDER/SYSTEM W

ULTRIX UNIX/C

IBM + DEC Data Modeling

your solution is:

SAGE SOLUTIONS

Ph 212-714-2599 FX 714-2558

875 6th Ave, #2305, NYC 10001

WANTED CONTRACTORS!!
ISI needs programmers, consultants and trainers for positions USA wide:

IBM
TELEON, CICS, HOGAN, TPF, IEW/
ADW, IEF, DB2, RPG, SYNON,
AS400, SAS, SAP

UNISYS
IFS, DP500, LINC, 1100/2200,
RIMS, XGEN, MAPPER, "A" SERIES,
"V" SERIES

UNIX/RDB/PC
CASETOOLS, ORACLE, C++, INFORMIX,
CLIENT/SERVER, SYBASE, INGRESS, XWINDOWS,
WINDOWS, dBASE, PARADOX,
NETWORKS and LANs, MOTIF

Information Solutions, Inc.
8625 Richardson Rd., #100
Walled Lake, MI 48390
(313) 360-4600/Fax: (313) 360-4453

SYBASE

- All Levels -

Immediate & future needs for DBAs, developers, etc. CALL TODAY to plan your future with COMSYS, an Inc. 500 national provider of technical consulting services. Call Cathy Earle @ 800-926-6797.

COMSYS

Fax: 301-921-3700

SENIOR SOFTWARE ENGINEER - 40 hrs./wk., 8am-5pm, \$48,000.00 per yr. To oversee coding and testing of large order processing/distribution systems. Determine client requirements, develop and implement project plans, cost estimates and quality assurance procedures. Requires Master's Degree in Computer Science, Business Administration or Math, 2 years experience in job offered or 2 years experience as Analyst/Consultant. Experience must include IBM 3090, DB2, CSP, CICS, MVS/XA, QMF, TSO/ISPF, COBOL and order processing systems. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 63892. "Employer Paid Ad."

COMPUTERWORLD Classified Marketplace

**gives you buyers
with extensive
purchase influence.**

In fact, a full 95% are involved in purchase decision making for their organizations. They determine needs, evaluate technologies, identify solutions, and select products and vendors for the entire range of information systems, as well as related products and services.

So if you're selling computer products and services, advertise in the newspaper that delivers buyers with volume purchasing influence. Advertise in *Computerworld's Classified Marketplace!*

**For more
information, call
(800) 343-6474**
(in MA, 508/879-0700)

COMPUTERWORLD MARKETPLACE PAGES

Where computer buyers meet computer sellers. Every week.

SOFTWARE OPPORTUNITIES

Let our national AWARD WINNING computer specialists assist you in your search. We have over 300 affiliated offices around the country ready to work for you!

SYSTEMS SOFTWARE \$80K+
AS/400, S/38 P/A TO \$48K
LIFE INSURANCE TO \$80K
DB2 ANALYSTS TO \$80K+
IDMS, IMS OR ADABAS TO \$50K
P/A (COBOL OR ALG) TO \$40K
MVS OR VM INTERNALS \$ OPEN
ACF/VTAM/NCP TO \$50K
COBOL/CICS TO \$40K
UNIX INTERNALS TO \$80K+
UNIX/C TO \$55K
COBOL/DB2 OR IMS TO \$48K

OVERSEAS JOBS

ROBERT SHIELDS &
ASSOCIATES
P.O. Box 890723, Dept. C
Houston, TX 77289-0723
713/488-7961
FAX: 713/486-1496

NATURAL/ADABAS SYSTEMS ENGINEER. Design, development, coding, testing & implementation of systems software & database software in a NATURAL/ADABAS environment using NATURAL, ADABAS, NATURAL2, DB2, COBOL, IMS & SQL software & IMS, DB2 & ADABAS databases. Systems development using Method/1 methodology. Perform system analysis, system design, database administration activity (data analysis, data normalization, data flow diagrams, file design & database management), and give instruction and consultation to MIS staff. Applicant required to have 4 yrs experience in the job duties described above. Must have proof of legal authority to work in the U.S. Salary will be \$55,000/yr for a 40-hour work week. Interested applicants please send resume to Illinois Department of Employment Security, 401 S. State St., 3 South, Chicago, IL 60605. Refer to job order #V-IL-4498-M. No calls. Employer paid ad.

**Over 629,000
Computer
Professionals
Read
Computerworld
weekly.**

... polish your image

What to say:

- ▶ 'I see that you've just upgraded your systems. I also recently read that this company has expanded its product line.' (Indicates you've done your homework by researching the company.)
- ▶ 'If I were hired, what duties would I be performing?' (Makes you sound interested.)
- ▶ 'I had same time between contract assignments, so I took a programming class.' (Explains gap in employment and shows interest in professional development.)
- ▶ 'I was part of a team that saved the company \$500,000 by streamlining a procedure.' (Showcases you as a teamplayer.)
- ▶ 'What opportunities are there for advancement?' (Shows initiative.)



Joseph Jones

EDUCATION:

1978 Computer Learning Center, Los Angeles, Calif.
Earned diploma in computer programming and analysis. Completed courses in Cobol, RPG, BAL, JCL, systems analysis and design.

1989 Cuesta College, San Luis Obispo, Calif.
Completed course in C programming language.

Hardware: IBM 30XX (S/MVS/XA), IBM 9370 (VM/CMS), IBM PC (MS-DOS), HP 3000 (MPE)

Software: Cobol, CICS, JCL, Interlist, CA-Datcom, Advanced Debugging Facility, File-Aid, Unicorn (CICS development tool), ALC, Fortran, Nomad, Displa, Telegraf, Basic, Yourdon methodology

PROFESSIONAL SUMMARY:

More than 12 years of progressively responsible experience designing and implementing mainframe applications with a strong focus on user analysis/support and financial applications.

EXPERIENCE:

Consultant (Nov. 1988 to Present)

As a member of team, developed and enhanced on-line and batch applications including:

Motion Movies International (Dec. 1990 to March 1991)
Specific applications included royalty and television systems. Developed Cobol and CICS applications in IBM 30XX (OS/MVS) environment. Left position at end of contract.

Pacific Power (Nov. 1988 to Nov. 1990)

Applications included inventory control, purchasing, accounting and management reporting. Used Cobol and CICS in IBM 30XX (OS/MVS) environment with CA-Datcom. Met extensively with users to determine business requirements. Analyzed needs and designed solutions. Wrote and tested structured code. Wrote documentation. Trained users. Made ongoing enhancements per user requests.

Institutional Software, Inc., San Luis Obispo, Calif. (July 1987 to Nov. 1988)

Senior systems analyst/Project leader

Company develops and markets software for the commercial banking market with a diverse product line ranging from mainframe to microcomputer applications.

As project manager, directed a staff of up to 15 employees and contractors in the porting of all product code from HP 3000 to IBM 9370 with Cobol and CICS. Personally designed and rewrote major portions of the applications to accommodate new systems interfaces and file systems. Installed the product under MVS/XA. Wrote VM/CMS utilities. Met with management to determine project milestones and critical components. Took corrective action to bring projects in on time and within budget.

California Computer Corp., San Francisco, Calif. (April 1984 to July 1987)

Systems engineer

Provided field support for VM/CMS-compatible minicomputer. Maintained hardware and software for customers. Responsible for hardware and software problem analysis and resolution. Trained customers. Supported salesmen during presales activities by giving demonstrations and presentations.

American Bancorp, San Francisco, Calif. (Aug. 1981 to April 1984)

Research analyst

Provided technical support to users. Consulted with users on design, development and implementation of programs and systems.

Data Systems, Inc., San Francisco, Calif. (March 1978 to Aug. 1981)

Programmer/Operator

Provided technical support to users. Debugged customers' programs. Responsible for troubleshooting telecommunication problems. Operated a Cyber 6400 computer.

Special thanks to Jim Parker, a senior MIS recruiter at Technical Connections, Inc. in Los Angeles

CW Charts: Janell Genovese

I S Pros

CAREERS/SOUTHEAST

Your Future Is Our Business

CICS Prog. Analysts To \$50K
(COBOL CSP DB2 Datcom)
IDMS Prog. Analysts To \$40K
IMS Prog. Analysts To \$39K
(COBOL DB2 DB/DC DL1)
SYSTEMATICS P/As \$40K
(Banking)
AS400 P/As & S/As To \$48K
(RPGIII RPG/400/COBOL)
C P/As & S/As To \$45K
(UNIX AIX VMS)
INFORMIX SYBASE
INGRES ORACLE To \$45K
(C 4GL SOL OOP)

With integrity and a personal touch we represent top local/regional companies Affiliates Nationwide

CONTACT BRAD MOSES

IS INFORMATION
SYSTEMS PROFESSIONALS
P.O. Box 41212
Raleigh, NC 27629
(919) 954-9100
FAX: (919) 954-1947

CA & AZ CONTRACTS

CONSULTANTS WANTED

PM
P. Murphy & Associates, Inc.

4405 RIVERSIDE DR., SUITE 100
BURBANK, CA 91505
(818) 841-2002 (714) 552-0506
FAX: (818) 841-2122
Member NACCB

Rise To The Challenge.
Call COMSYS.

If you are at the top of your field and thrive on challenging opportunities to master new technologies, call COMSYS today. We're a leader in supplying Fortune 500 companies with computer software consultants. COMSYS provides competitive salaries and full benefits. We're looking for professionals with the following skills to become part of our nationwide team:

OS/2, PM, C
DB2 CICS
TELON COBOL
FOCUS VM/CMS
SYBASE DBA
UNIX TESTER

ORACLE
UNIX Sys Admin
SYBASE all lvs
POWERBUILDER
Client Server
BookMaster

SAS
M & D
ETHERNET
DB2/IMS
UNIX C++
IEF

Adabas/Natural
ADW/Bachman
EASEL
VAX VMS C
PL/1 CICS DB2
IDMS

COMSYS®
computer project support

Dept. CW 4 Research Place, Rockville, MD 20850
(301) 921-3600 • FAX (301) 921-3700(fine)

800-926-6797

Atlanta • Colorado Springs • Dallas • Denver • Phoenix
Raleigh • Washington, DC

NACCB Member EEO/M/F/H/V

COMPUTER INTELLIGENCE.

We're one of the largest and most respected Inc. 500 software service companies in the Research Triangle, NC area—and have been for over ten years. With a client list as impressive as our professional staff, we provide a diverse range of consulting and permanent assignments. Join us if you have 2+ years of experience and would like to enjoy comfortable living in our attractive location. Current openings include requests for the following skills:

MAINFRAME

DB2, CICS/COBOL, CSP, FOCUS, ARTEMIS, DATACOM/IDEAL, WALKER INTERACTIVE, CASE TOOLS, SNA DEVELOPERS, VM & MVS SYSTEM PROGRAMMERS

MIDRANGE

C/C++, UNIX/AIX, AS/400 P/A, INFORMIX 4GL & DBA, FDDI

PC/LAN

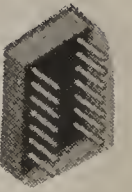
BANYAN VINES, PC COMMUNICATIONS & NETWORK DEVELOPERS, TECH SUPPORT, 4D, SMALLTALK/MACINTOSH

With high quality assignments, we're able to offer some of the highest compensation in the area. We are ideally located within close proximity to both the beach and the mountains. Mail or fax your resume to: Computer Intelligence, Inc., Dept. 921, P.O. Box 98990, Raleigh, NC 27624-8990. Fax: (919) 676-8484. Phone: (919) 676-8300 or (800) 832-3443 nationwide. EOE.

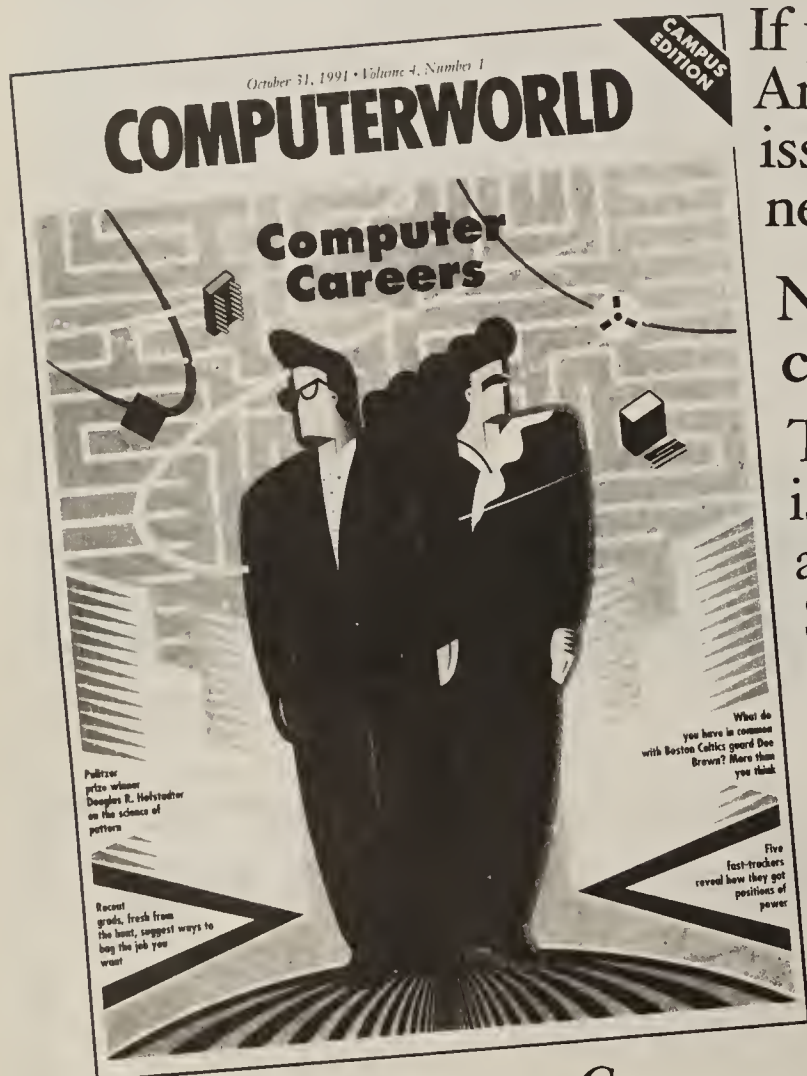
Computer
Intelligence,
Inc.

Now you have a better way to recruit university and college students planning computer careers:

Computerworld's fifth annual Campus Recruitment Edition



Issue Date: October 31, 1992
Close: September 18, 1992



If you recruit top computer career students on America's campuses, your message in this special issue will target more of them than any other newspaper or magazine!

Now you can recruit computer talent on campus without leaving your office!

That's because 150,000 copies of this special issue will be distributed to America's best and brightest students enrolled in Information Systems (IS), Computer Science, Computer Engineering, Electrical Engineering, and just about any other computer-related curricula.

Finally you can cost-effectively reach the quality and quantity of students you need!

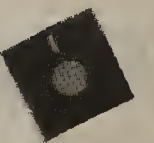
And you can do it with just one ad in *Computerworld's Campus Recruitment Edition!* For a rate card reflecting complete campus distribution, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700). But hurry ... this issue closes September 18, 1992.



Planned Editorial Features:

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.
- And much more!



Garden State: No picnic

Previously vacant posts are being filled, but no true growth

BY JILL VITIELLO
SPECIAL TO CW

Information systems opportunities in the Garden State have been nipped in the bud, thanks to the economy. The New Jersey Department of Labor says the state has one of the highest unemployment rates in the U.S. The recession has had a lingering impact across the board, including in the IS community.

"Unemployment is greater than ever in IS," says Gene Pinadella, vice president of business systems at The Mennen Group in Morristown, N.J., which was recently acquired by Colgate Palmolive Co.

Whatever hiring is going on, recruiters and IS practitioners agree, is more a function of pent-up demand to fill open positions than an indication of true growth in IS jobs.

When asked to pinpoint a position for which there might be demand, Allan Grossman, senior partner at A. Davis & Co. in Iselin, N.J., says it may be for the visionary IS executive who can formulate a plan for the future.

Troubled times

The forecast for New Jersey is sobering in a state that saw unprecedented economic growth during the 1970s and 1980s. Snuggled between New York City and Philadelphia, New Jersey became a bedroom community for those cities.

In addition, the state is home to an array of corporate headquarters and manufacturing plants in industries such as pharmaceuticals and chemicals. Insurance companies and other financial services firms are also settled in the state.

New Jersey's economic diversity and strength turned the state into "a mecca for talented IS people," says Julian Gonzales, executive recruiter at Carter McKenzie, Inc. in West Orange, N.J.

In the past, Gonzales says, firms would

fight for IS professionals, driving up salaries to inflated heights. Today, those IS people have virtually priced themselves out of the market, or if they're laid off, they are interviewing for jobs that pay less than what they earned in the state's heyday.

For example, Gonzales knew of a senior systems software person who was earning \$63,000 last year. He was laid off and found a job at the same level for only \$52,000.

Pinadella expects that his company's merger with Colgate Palmolive will force him to significantly cut his IS organization. "Not only is the company downsizing the staff," he says, "it's downsizing what it expects of IS. We just won't be involved in the same number of projects as before because we won't have the resources."

A companywide hiring freeze at Bristol-Myers Squibb Co. means the East Brunswick facility's IS staff will stay at 56, says Robert Faas, director of information technology.

At Mercedes-Benz of North America, Inc., Vince Morroti, general manager of IS, reports that his department of 98 is "holding steady" despite a backlog of internal requests.

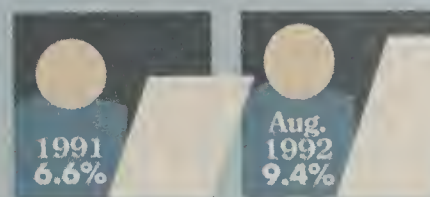
The lowest demand in IS tends to be for entry- and mid-level professionals. Cobol programmers also seem to be out. "Five years ago, all the students we turned out of our computer science program were scooped up into good jobs right out of college," says Terrence Bazylewicz, director of MIS and computer services at Jersey City State College in Jersey City. "Now, nobody gets jobs."

If there's any hope for the future, it's in specific technology areas, namely computer-aided software engineering technology, data management, telecommunications, local-area networks and re-engineering, particularly in client/server.

Skills that are associated with pushing technology out to end users will be in demand because they help companies deal with reduced staffs. By empowering end

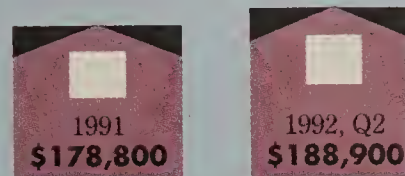


New Jersey's unemployment rate

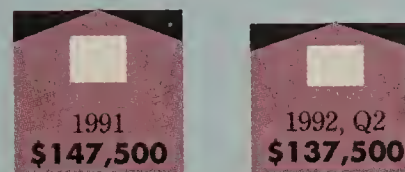


Sources: N.J. Department of Labor, Bureau of Labor Force Statistics, Office of Labor Market and Demographic Research

Average housing costs Newark



Average housing costs Trenton



Source: National Association of Realtors

users to access data and information on their own, the leaner IS work force is freed up to do more strategic information management.

Ultimately, the person in the best position to land a job these days might be "dynamic, visionary change agents who can look 10 years down the road and incorpo-

Top 10 employers in Newark

(By number of employees)

- New Jersey Bell Telephone Co.
- Public Service Electric & Gas Co.
- University of Medicine & Dentistry
- New Jersey Transit Corp.
- The Prudential Insurance Company of America
- First Fidelity Bancorporation
- Blue Cross/Blue Shield of New Jersey
- Mutual Benefit Life Insurance Co.
- Continental Airlines
- Anheuser-Busch, Inc.

Source: Newark Chamber of Commerce

Top 10 employers in Mercer County

(By number of employees)

- Princeton University
- Bristol-Myers Squibb Co.
- Educational Testing Service
- General Electric Astro Division
- General Motors Corp.
- Princeton Medical Center
- New Jersey Manufacturers Insurance Co.
- St. Francis Medical Center
- Mercer Medical Center
- McGraw-Hill, Inc.

Source: Mercer County Chamber of Commerce

rate IS into the business strategy," Grossman says. For instance, he recently had a surge of placements in the six-figure salary range, and he sees more of that in the future.

Vitiello is a free-lance writer based in East Brunswick, N.J.

APPLICATIONS SOFTWARE MANAGER

Northern NJ Bank currently seeks an Applications Software Manager to manage a staff of twenty plus programmer analysts operating in a DOS/VSE environment utilizing Volle and Librarian. The primary software language is COBOL. Candidate must possess 7-10 years application software experience, preferably in banking, with a minimum of 3-4 years as an Applications Software Manager. Candidate must have solid analytical problem solving skills, as well as, planning and administrative experience. Systematic software experience is preferred.

We will not pay a fee to an agency for this position.

If interested, send resume with salary requirement, to:

NATIONAL COMMUNITY BANK
385 RIFLE CAMP ROAD
P.O. BOX 403
WEST PATERSON, NJ 07424
OR
FAX TO: (201) 357-7440
An Equal Opportunity Employer

Staff Consultant - Systems

Eager to fulfill your potential? Our management consulting firm seeks motivated information systems consultants with 1-3 years' work experience to immediately contribute to our successful retail and consumer products practice in the Northeast. If you've designed and managed the software development process or have relevant work experience in MIS, Comp. Sci., Ops. Res., or Business Mgmt., our opportunity might be right for the next step in your career. Staff Consultants must have a BS/BA, strong communication skills and be able to travel nationwide more than 50% of business nights.

To be considered for this professional challenge, send resume immediately to:

Kurt Salmon Associates KSA

103 Carnegie Center, Suite 205, Princeton, NJ 08540
Attn: Dept. 921

PROGRAMMER ANALYST

Datacolor International is a 20-year leader in the color measurement and control industry. We seek an experienced "C" language programmer analyst to work in a fast-paced environment. This position will design, code, test, document and implement new scientific and engineering computer technology and provide project leadership.

B.S. in Computer Science or related degree and 3-5 years MS-DOS programming experience with a history of successful project completion are required. Experience in Windows and/or object-oriented programming helpful.

We offer an excellent working environment and a comprehensive salary and benefits package. For immediate consideration, please send resume and salary requirements in confidence to the Personnel Department at: **DATACOLOR INTERNATIONAL, 5 Princess Road, Lawrenceville, NJ 08648. EOE M/F/D/V.**

"C" is a trademark of Bell Labs.

Programmer/Analysts

WE'LL GIVE YOU CHALLENGE, CHANGE AND A CHANCE TO GROW

Discover the challenges of consulting at IMI Systems Inc., a multimillion dollar software consulting firm with a Fortune 500 clientele. Here, your professional life can combine the involvement of long-term assignments with the excitement of continually new challenges. Currently, we seek professionals with 3-5 years' experience in:

- UNIX Systems Administration
- SYBASE, SQL
- Object-Oriented Programming/Development
- UNIX C with X-Windows
- VAX, VMS, C Development

In return for your expertise, you'll receive a highly competitive salary and comprehensive benefits including 401(k) retirement plan. For immediate consideration, please call or send/fax resume with salary history to: Debbie or Diane, (201) 292-9200, IMI Systems Inc., Dept. CW921, One Gatehall Drive, Parsippany, NJ 07054, FAX # (201) 292-9227. An equal opportunity employer.



IMI SYSTEMS INC.

What's Good About Consulting Is Better At IMI.

Hiring Managers

Recruit qualified computer and communications professionals with the *IDG Communications Computer Careers Network* of five leading computer newspapers. For more details, call Lisa McGrath at:

(800) 343-6474
(in MA, 508/879-0700)

PROG/ANAL/SYS/ADMIN/DBA \$40K-\$130K

IBM/SUN/MAC/PC Many Oppty's "NY/NJ/CT". 2+ Yrs: C/C++, SMALLTALK-80, VISUAL-BASIC, GUI, GUPTA/SQL, X-WINDOWS/MOTIF, MS-WINDOWS/SDK, SUN/UNIX ADMIN, LAN/WAN ADMIN, TCP/IP, EXCEL, SYBASE, ORACLE, INFORMIX, ETHERNET, TOKEN RING, NOV-ELL, SQL SERVER, DB2/SQL, IMS, CICS, CSP/APS, COBOL/COBOL II, FOCUS, PL/1, NATURAL/ADABASE, IDMS/ADS/O, MVS, VTAM, VAX/VMS, IEW, ADW, CASE TOOLS, dBASE, MICROFOCUS COBOL, CLIPPER, FOXPRO, Box 270, Pinebrook, N.J. 07058. Fax 201-335-1094



Garden State: No picnic

Previously vacant posts are being filled, but no true growth

BY JILL VITIELLO
SPECIAL TO CW

Information systems opportunities in the Garden State have been nipped in the bud, thanks to the economy. The New Jersey Department of Labor says the state has one of the highest unemployment rates in the U.S. The recession has had a lingering impact across the board, including in the IS community.

"Unemployment is greater than ever in IS," says Gene Pinadella, vice president of business systems at The Mennen Group in Morristown, N.J., which was recently acquired by Colgate Palmolive Co.

Whatever hiring is going on, recruiters and IS practitioners agree, is more a function of pent-up demand to fill open positions than an indication of true growth in IS jobs.

When asked to pinpoint a position for which there might be demand, Allan Grossman, senior partner at A. Davis & Co. in Iselin, N.J., says it may be for the visionary IS executive who can formulate a plan for the future.

Troubled times

The forecast for New Jersey is sobering in a state that saw unprecedented economic growth during the 1970s and 1980s. Snuggled between New York City and Philadelphia, New Jersey became a bedroom community for those cities.

In addition, the state is home to an array of corporate headquarters and manufacturing plants in industries such as pharmaceuticals and chemicals. Insurance companies and other financial services firms are also settled in the state.

New Jersey's economic diversity and strength turned the state into "a mecca for talented IS people," says Julian Gonzales, executive recruiter at Carter McKenzie, Inc. in West Orange, N.J.

In the past, Gonzales says, firms would

fight for IS professionals, driving up salaries to inflated heights. Today, those IS people have virtually priced themselves out of the market, or if they're laid off, they are interviewing for jobs that pay less than what they earned in the state's heyday.

For example, Gonzales knew of a senior systems software person who was earning \$63,000 last year. He was laid off and found a job at the same level for only \$52,000.

Pinadella expects that his company's merger with Colgate Palmolive will force him to significantly cut his IS organization. "Not only is the company downsizing the staff," he says, "it's downsizing what it expects of IS. We just won't be involved in the same number of projects as before because we won't have the resources."

A companywide hiring freeze at Bristol-Myers Squibb Co. means the East Brunswick facility's IS staff will stay at 56, says Robert Faas, director of information technology.

At Mercedes-Benz of North America, Inc., Vince Morroti, general manager of IS, reports that his department of 98 is "holding steady" despite a backlog of internal requests.

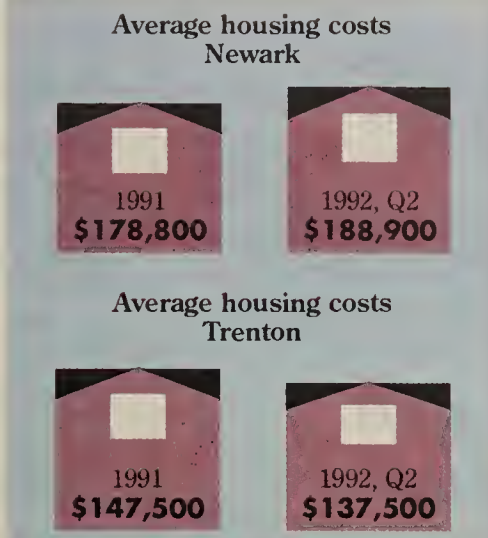
The lowest demand in IS tends to be for entry- and mid-level professionals. Cobol programmers also seem to be out. "Five years ago, all the students we turned out of our computer science program were scooped up into good jobs right out of college," says Terrence Bazylewicz, director of MIS and computer services at Jersey City State College in Jersey City. "Now, nobody gets jobs."

If there's any hope for the future, it's in specific technology areas, namely computer-aided software engineering technology, data management, telecommunications, local-area networks and re-engineering, particularly in client/server.

Skills that are associated with pushing technology out to end users will be in demand because they help companies deal with reduced staffs. By empowering end



Sources: N.J. Department of Labor, Bureau of Labor Force Statistics, Office of Labor Market and Demographic Research



Source: National Association of Realtors

Top 10 employers in Newark

(By number of employees)

- New Jersey Bell Telephone Co.
- Public Service Electric & Gas Co.
- University of Medicine & Dentistry
- New Jersey Transit Corp.
- The Prudential Insurance Company of America
- First Fidelity Bancorporation
- Blue Cross/Blue Shield of New Jersey
- Mutual Benefit Life Insurance Co.
- Continental Airlines
- Anheuser-Busch, Inc.

Source: Newark Chamber of Commerce

Top 10 employers in Mercer County

(By number of employees)

- Princeton University
- Bristol-Myers Squibb Co.
- Educational Testing Service
- General Electric Astro Division
- General Motors Corp.
- Princeton Medical Center
- New Jersey Manufacturers Insurance Co.
- St. Francis Medical Center
- Mercer Medical Center
- McGraw-Hill, Inc.

Source: Mercer County Chamber of Commerce

users to access data and information on their own, the leaner IS work force is freed up to do more strategic information management.

Ultimately, the person in the best position to land a job these days might be "dynamic, visionary change agents who can look 10 years down the road and incorpo-

rate IS into the business strategy," Grossman says. For instance, he recently had a surge of placements in the six-figure salary range, and he sees more of that in the future.

Vitiello is a free-lance writer based in East Brunswick, N.J.

APPLICATIONS SOFTWARE MANAGER

Northern NJ Bank currently seeks an Applications Software Manager to manage a staff of twenty plus programmer analysts operating in a DOS/VSE environment utilizing Volle and Librarian. The primary software language is COBOL. Candidate must possess 7-10 years application software experience, preferably in banking, with a minimum of 3-4 years as an Applications Software Manager. Candidate must have solid analytical problem solving skills, as well as, planning and administrative experience. Systematics software experience is preferred.

We will not pay a fee to an agency for this position.

If interested, send resume with salary requirement, to:

NATIONAL COMMUNITY BANK
385 RIFLE CAMP ROAD
P.O. BOX 403
WEST PATERSON, NJ 07424
OR
FAX TO: (201) 357-7440
An Equal Opportunity Employer

Hiring Managers

Recruit qualified computer and communications professionals with the *IDG Communications Computer Careers Network* of five leading computer newspapers. For more details, call Lisa McGrath at:

(800) 343-6474
(in MA, 508/879-0700)

PROG/ANAL/SYS/ADMIN/DBA \$40K-\$130K

IBM/SUN/MAC/PC Many Oppty's "NY/NJ/CT". 2+ Yrs: C/C++, SMALLTALK-80, VISUAL-BASIC, GUI, GUPTA/SOL, X-WINDOWS/MOTIF, MS-WINDOWS/SDK, SUN/UNIX ADMIN, LAN/WAN ADMIN, TCP/IP, EXCEL, SYBASE, ORACLE, INFORMIX, ETHERNET, TOKEN RING, NOV-ELL, SOL SERVER, DB2/SOL, IMS, CICS, CSP/APS, COBOL/COBOL II, FOCUS, PL/1, NATURAL/ADABASE, IDMS/ADS/O, MVS, VTAM, VAX/VMS, IZW, ADW, CASE TOOLS, dBASE, MICROFOCUS COBOL, CLIPPER, FOXPRO, Box 270, Pinebrook, N.J. 07058. Fax 201-335-1094

Staff Consultant - Systems

Eager to fulfill your potential? Our management consulting firm seeks motivated information systems consultants with 1-3 years' work experience to immediately contribute to our successful retail and consumer products practice in the Northeast. If you've designed and managed the software development process or have relevant work experience in MIS, Comp. Sci., Ops. Res., or Business Mgmt., our opportunity might be right for the next step in your career. Staff Consultants must have a BS/BA, strong communication skills and be able to travel nationwide more than 50% of business nights.

To be considered for this professional challenge, send resume immediately to:

Kurt Salmon Associates KSA

103 Carnegie Center, Suite 205, Princeton, NJ 08540
Attn: Dept. 921

PROGRAMMER ANALYST

Datacolor International is a 20-year leader in the color measurement and control industry. We seek an experienced "C" language programmer analyst to work in a fast-paced environment. This position will design, code, test, document and implement new scientific and engineering computer technology and provide project leadership.

B.S. in Computer Science or related degree and 3-5 years MS-DOS programming experience with a history of successful project completion are required. Experience in Windows and/or object-oriented programming helpful.

We offer an excellent working environment and a comprehensive salary and benefits package. For immediate consideration, please send resume and salary requirements in confidence to the Personnel Department at: **DATACOLOR INTERNATIONAL, 5 Princess Road, Lawrenceville, NJ 08648.** EOE M/F/D/V.

"C" is a trademark of Bell Labs.

Programmer/Analysts

WE'LL GIVE YOU CHALLENGE, CHANGE AND A CHANCE TO GROW

Discover the challenges of consulting at IMI Systems Inc., a multimillion dollar software consulting firm with a Fortune 500 clientele. Here, your professional life can combine the involvement of long-term assignments with the excitement of continually new challenges. Currently, we seek professionals with 3-5 years' experience in:

- UNIX Systems Administration
- SYBASE, SQL
- Object-Oriented Programming/Development
- UNIX C with X-Windows
- VAX, VMS, C Development

In return for your expertise, you'll receive a highly competitive salary and comprehensive benefits including 401(k) retirement plan. For immediate consideration, please call or send/fax resume with salary history to: Debbie or Diane, (201) 292-9200, IMI Systems Inc., Dept. CW921, One Gatehall Drive, Parsippany, NJ 07054, FAX # (201) 292-9227. An equal opportunity employer.



IMI SYSTEMS INC.

What's Good About Consulting Is Better At IMI.



A solid foundation can be the difference between excellence and mediocrity.

It's what we've believed since our inception in 1949. And it's the reason we've grown to become the world's largest independent computing services company. At ADP, we're committed to providing our associates with the resources, tools and technological challenges they need to succeed. Currently, we're seeking programming professionals at various levels, as well as training professionals.

Sr./Lead Programmer Analysts

You'll be asked to actively participate in all phases of the project life cycle, write programming specifications, develop and monitor project plans, review programming activities of subordinates, adhere to company and department standards, and perform other related duties as assigned by management.

The ideal candidates will come from a large financial systems environment, possess a minimum of six years' relevant experience and knowledge of COBOL/COBOL II, VSAM, JCL and OS/MVS processing. Your background should also include exposure to all phases of the project life cycle, supervisory experience, hands-on work in an IBM mainframe environment and knowledge of and/or experience with data base processing. You should also be well-versed designing, coding, testing and debugging complex application modules. The ability to work effectively under pressure and good communication skills also essential. Familiarity with ASSEMBLER, Microfocus Work Bench, ADW design tools, and application performance tuning a plus.

Computer Operations Training Developer

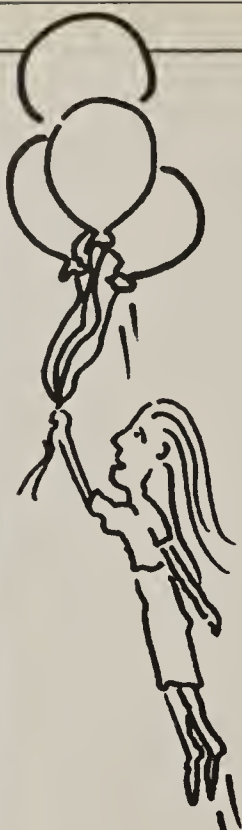
Here, you'll be asked to design and develop instructional modules for computer operators and technical support personnel. Your qualifications should include a working knowledge of DOS/VSE, VM, CMS, and JCL, and a Bachelor's degree or equivalent work experience. A background with CA Datacom/DB, Dylakor, and VTAM/SNA a plus.

PC Technology/LAN Training Developer

Your extensive LAN experience will be instrumental in developing training for our PC support and installation personnel. Your qualifications should include mastery of PC/MS DOS, Novell Netware, OS/2 and PC troubleshooting. A Bachelor's degree or equivalent experience is required. Experience as a Novell Certified Netware Engineer is a definite plus.

In both training developer positions, your focus will be to develop and revise instructional materials for classroom use and/or self-administered training according to established procedures. You'll also identify and define gaps between ideal and actual performance and determine causes using standard needs analysis techniques; perform developmental testing on the instructional modules developed; and resolve and evaluate user feedback and revise modules appropriately. Travel up to 20% is required.

If you're searching for a progressive company where you can develop your skills and your career at the same time, you'll find it with ADP. Find out more about us. You won't believe what we could do for your future. For immediate consideration, please send your resume with salary requirements, indicating position of interest to: **Human Resources, Dept. CW0035, Automatic Data Processing, Inc., One ADP Blvd., MS#251, Roseland, NJ 07068.** An equal opportunity employer.



One thing we can't offer is a stable environment.

Medco Containment Services, Inc., a Fortune Service 100 leader, is paving the way in the dynamically expanding field of managed healthcare - specifically, prescription drug cost management. Crain's lists us as the 18th fastest growing company in the tri-state area and industry forecasters project a 55% growth rate for each of our next 5 years!

We now have the following openings for talented MIS professionals in our Montvale and Fair Lawn facilities:

SENIOR PROGRAMMER/ANALYSTS PROGRAMMER/ANALYSTS

You'll need a minimum of 3 years' experience designing, coding, testing and debugging applications programs utilizing COBOL, VSAM, CICS, and DB2 in an MVS environment. Good communications skills are also essential.

Medco rewards its employees with a competitive salary, comprehensive benefits and exceptional growth potential, all within our exciting organization. For immediate consideration, please fax or send your resume, indicating salary requirements to: Senior Staffing Specialist- MIS, Dept AM-9, MEDCO CONTAINMENT SERVICES, Inc., 100 Summit Avenue, Montvale, NJ 07645. An Equal Opportunity Employer M/F/D/V. (Principals only, no phone calls, please.)

FAX: 201-358-5227



We're establishing a growth record that's too dynamic for that.

Xtraordinary Opportunity

Xpedite Systems, Inc., a leading provider of enhanced fax services, is **Xpanding** its **Xpert** Development Team.

Our solid success in North America, entry into the European market, and backlog of newly designed product requirements has created an urgent need for software professionals. **Xperienced** in design & implementation using C, C++ under **UNIX** in a store & forward message switching environment. To qualify for positions identified below, other skills are needed in various combinations including: **RD-BMS, X.400, X-Windows, Data Communications, OS/2, DOS, DOS/Windows.**

Senior Software Engineers

Programmer Analysts Data Communication Engineers

Systems Administration
Competitive Salaries -
Company Paid Benefits -
Xcellent work environment.

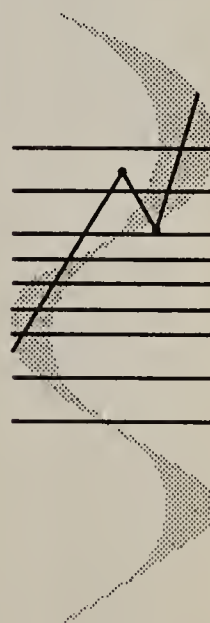
To find out if this **Xtraordinary Opportunity** fits into your future, send your resume to:

**446 Highway 35,
Eatontown, NJ 07724
FAX 908/389-8823
ATTN: Personnel**

COMPUTER SCIENCES CORPORATION

Where People and Technology Advance Together

CSC Partners is a vital part of the consulting group of Computer Sciences Corporation, an independent systems integrator, employing 26,000 worldwide. We've grown from a 3 person company to one with billings of over \$120 million by meeting and exceeding client expectations time and time again.



Lots of companies claim to be making inroads in technology but hardly any mention another vital component of success - the advancement of its people. At CSC Partners, our commitment to teamwork means we work with our people to foster their advancement. Like assigning challenging projects that will make the most of their abilities. And providing training programs in everything from systems design to project management to public speaking and more.

If you are ready to advance, work with the company that will work with you, **CSC Partners.**

EDI Programmer Analyst

This position will involve programming analysis, design and business consulting in an AS400 environment. We seek individuals with 3+ years of experience and a solid technical foundation in either PC's or IBM mainframes to work with Electronic Data Interchange (EDI) translators such as: GENTRAN, PREMENOS, and EDI Support. Experience with standards ANSI X.12, NWDA and/or UCS a plus.

DB2/CICS Programmer Analyst

You will be part of a team that will include CSC Partners consultants, client IS staff and the business end users to provide flexible, timely access to critical information. You will have the opportunity to use the latest technologies to design online/interactive and batch software. The position requires 3+ years of experience in an IBM mainframe environment utilizing DB2/CICS. Formal life cycle experience a plus.

AS400 Programmer Analyst

This position will involve programming analysis, design and business consulting, assisting our clients in developing critical applications or participating in successful conversion efforts. We are seeking 3+ years of experience with COBOL in an AS400 environment. The desire to work with a variety of clients and applications is essential.



CSC Partners
A Company of
Computer Sciences Corporation

In addition to technical challenges, and advancement opportunities, you'll receive a competitive compensation package which includes comprehensive benefits. Send your resume and salary requirements, indicating position of interest, to: **Deborah Bloore, Recruiting Manager, CSC Partners, 1200 U.S. Highway 22, Bridgewater, NJ 08807-2943.** An Equal Opportunity Employer M/F/D/V.

PROGRAMMER ANALYSTS SYSTEMS ANALYSTS DATABASE SPECIALISTS

With at least two years experience in:

COBOL, DB2, ORACLE, CASE TOOLS, IMS, SYBASE, GUI's, INFORMIX, A.I., LAN/WAN, C++/UNIX

Send resume and salary history to **TEKWOOD, Dept CW921, 239 Rte 22 E, Green Brook, NJ 08812** or fax (908) 968-9437

PROGRAMMER ANALYST

NJ retailer has an opening for a Programmer/Analyst with exp in one or more of the following:

AS/400, E35, RPG/400, CL Communications: B1SYNC, SDLC, EDI, E-Mail

Applications: Accounting, Payroll, Human Resources, Inventory Mgmt, Forecasting, Purchasing, Distribution, Warehouse

4680 BASIC, FLEX O/S
Applications: POS, Direct Store Delivery, Inventory Mgmt, Time and Attendance, Shelf Labeling, Signage
Forward resume (no agencies please) in confidence to:
**MILESTONE BOX 723
225 W. 34th St. Ste 1512
New York, NY 10001**
An equal oppy employer M/F

PROGRAMMER/ANALYST

Immediate contract and full-time openings for MIS professionals with the following skill sets:

- X WINDOWS
- IMS DB/DC
- RS6000
- SYSTEMS TESTERS
- C, C++
- LAN/CLIENT/SERVER
- INTERBASE
- TANDEM
- ORACLE
- SYBASE
- DB2/CICS
- MAC OMNI-7
- AS/400
- VAX/RBD
- CASE TOOLS

BUTLER SERVICE GROUP
110 Summit Avenue
Montvale, NJ 07645
(800) 788-0999
FAX: (201) 573-9095

DP PROFESSIONALS

Casting a New Light on Information Technology Services
Explore a consulting or salary position utilizing one or more of the following skills:

- OS COBOL/CICS
- DB2/SQL
- IMS DB (DC)
- ORACLE
- INFORMIX
- SYBASE
- C/UNIX
- MS-DOS/LAN
- RAMIS

Contact Mr. V. DiLeonardo:

PRISM
776 Mountain Blvd.
Watchung, NJ 07060
(908) 769-0800
FAX (908) 769-1430EOE

REGAL DATA SYSTEMS

The Relentless Pursuit Of Excellence!

You'll find it at **Regal Data Systems**. As one of the most successful and respected computer consulting firms with a UNIX oriented client base, we can offer you an exciting diversity of projects, the professional support you expect, and a client base with technological environments to challenge your skills and achieve your career goals with assignments in New York, New Jersey, Pennsylvania and D.C. areas.

Outstanding opportunities are immediately available for talented, career driven technical specialists including Software Developers, System Testers, System Programmers, System Administrators, Database Designers/DBA Performance Tuners and System Integrators with a minimum of three years business experience in any of the following areas:

UNIX

- SUN
- 3B SERIES
- OSX
- X-Windows
- Powerbuilder
- INFORMIX
- any communications protocols (OSI, X.25, SONET, T1, etc.)
- M68000
- UNIX System V
- C
- MOTIF
- GUPTA
- UNIPLEX
- PYRAMID
- SUN OS
- C++
- OPENLOOK
- SYBASE
- Micro Assembler
- AT&T
- BSD
- MLS
- JAM
- ORACLE

GENERAL SKILLS

We also provide support to our clients and require expertise in the following areas:

- IMS DB/DC
- Software 2000
- Arthur Andersen's DCS
- NOMAD
- Human Factors Engineers
- Software & Hardware Engineers
- MS-Windows Developers
- DB2
- McCormack & Dodge
- AS400
- Applied Mathematics
- LAN/WAN
- SAS
- CASE TOOLS

For immediate consideration, please rush your resume to: **Recruiting Department, REGAL DATA SYSTEMS, 285 Davidson Avenue, Somerset, NJ 08873**, or call (908) 469-6227, or fax (908) 469-9332. Member NACCB.

UNIX EXPO
THE OPEN SYSTEMS SHOW

See Us At The Javits Convention Center of New York
September 22-24, 1992 • Booth #1674

SYSTEMS ENGINEER

Dataflex is one of the fastest growing network integrators and PC support organizations in the NJ/NY Metropolitan area. We are a Novell Platinum Dealer authorized in Banyan Vines, OS/2 LAN server & Microsoft LAN Manager. We have shown an impressive record of growth, profitability, and maintain a solid financial base. This means a wealth of opportunity...a chance to make your mark with a company who values top technical talent.

We are looking for an individual with a broad range of experience from design to the installation and management of LAN environments. You will be part of a team that is working with customers to determine their connectivity needs and to develop network solutions. Qualified candidates must have 3-5 years of experience installing, troubleshooting and managing Novell, IBM LAN server or Banyan Vines networks. A thorough understanding of wide area network concepts, as well as experience in the implementation of host gateways and local/remote bridges are needed. Certifications as a CNE and CBE are highly desirable.

We require excellent written and oral skills and an understanding that customer satisfaction is the priority. In exchange for your talents, we offer a competitive salary, full benefits including company 401K and unlimited growth potential with a company that is financially strong and a leader in the distribution, support, service and integration of desktop computers. If you are qualified, submit your resume, including salary history and requirements, to Human Resources Department, Dataflex Corporation, 3920 Park Avenue, Edison New Jersey 08820.

Equal Opportunity Employer M/F

Dataflex

C O R P O R A T I O N

Results.

Computerworld gives recruitment advertisers results. Weekly. Regionally. And Nationally. To place your ad, call Lisa McGrath at 800-343-6474 (in MA, 508-879-0700).

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

Computerworld gives you the unique option of REGIONAL or NATIONAL recruitment advertising.

Whether you want to run your ad in the Eastern, Midwestern, Western, National, or any combination of regional editions. Computerworld gives you the only regional recruitment advertising section available in the United States exclusively for computer professionals. And no other newspaper or magazine reaches so many qualified computer professionals regionally or nationally!

Computerworld's Regional Editions



To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD

Where the qualified candidates look. Every week.

Our Employees Often Talk About Us In Reference To Growth... Ours And Theirs!

Reed Reference Publishing (RRP), the newly "formed" division of Reed Publishing (USA) Inc., is a leading publisher of bibliographical, biographical, and business reference materials. The formation of RRP brings together the products and services -- as well as over 500 years of combined experience -- of seven reference publishers, to include the recent acquisition of Martindale-Hubbell and R.R. Bowker.

Exceptional growth in each of RRP's businesses in 1992 has created significant growth opportunities in both editorial and financial systems areas. We are looking for 1 Sr. Programmer Analyst with experience in ADS/O, IDMS, MVS, COBOL, and TSO. A Sr. Programmer Analyst with experience in MS/DOS, WINDOWS, MICROFOCUS COBOL, and GUPTA/SQL. Two (2) Sr. Programmer Analysts with experience in MS/DOS, MICROFOCUS COBOL, BTRIEVE, and LASER PRINT TECHNOLOGY.

All positions require 3-5 years experience with strong Communication and Analytical skills.

Reed Reference Publishing offers the right individuals highly competitive salaries as well as a comprehensive benefits package. Get in on the ground floor of a company whose fast-paced environment means growth opportunity for you, by sending resume to: Ann Roycroft, Human Resources Manager, Reed Reference Publishing, 121 Chanlon Road, New Providence, NJ 07974. FAX: 908-665-3555.

**REED
REFERENCE
PUBLISHING**

Sales CORPORATE SALES REPRESENTATIVES We've got the competitive edge.

Get ready for success that doesn't stop. CompuAdd's powerful, high quality PC products have given us a unique corner on the computer marketplace. With over 115 retail computer stores nationwide, and a solid 10 year record of success, CompuAdd ranks as one the top direct sellers of PC products and services.

To keep us at that leading edge, we're looking for assertive, energetic Corporate Sales Representatives for locations in:

**NJ DE MD VA
PA NY CT MASS**

The preferred candidates will have a Bachelor's degree or equivalent, and the ability to develop new business as well as service existing clients. Demonstrated knowledge of microcomputer applications, peripherals and software, coupled with excellent customer service skills is required.

We are also accepting applications for other positions.

Set your sights on record breaking success. We offer a highly competitive salary and benefits package. Please forward resume, with salary requirements, to: REGIONAL MANAGER, CompuAdd, 5603 Concord Pike, Wilmington, DE 19803. FAX: (302) 477-2509. Equal opportunity/affirmative action employer.

CompuAdd®
Customer driven, by design.

SYSTEMS ENGINEER: Analyze, develop, maintain and enhance applications developed under MCP, UNIX and COMS operating systems using C, COBOL, PASCAL, ALGOL, DBASE and Intel assembly languages on UNISYS A/B/V series and DP1800 mainframes. Develop programs for logging procedures and IPS. Debug, modify and test the applications developed. Project coordination and preparing technical reports and end-user manuals. Must have strong knowledge of Item Processing Systems. Must have Bachelor degree in computer science/engineering or equivalent with minimum 4 years related experience. Salary \$42,000.00 per year for 40 hours week. Must have proof of legal authority to work in the US. Qualified applicants send resume to: GEORGIA DEPARTMENT OF LABOR, Job Order # GA 5570694, 1535 Atkinson Road, Lawrenceville, GA 30243, or to the nearest Georgia Job Service Center.

SYSTEM ANALYST. Must have B.S. in Computer Science or equivalent. To analyze, design, create program specifications, develop, test and implement applications for Personnel Information Systems, Inventory Control Systems, Financial and Banking Systems using C, FORTRAN, PL/1 languages and INGRES RDBMS, DB2 and tools such as CICS, PM, FMS, SMARTSTAR under VMS, MVS, OS/2 and DOS operating systems. Also required to analyze and study customer's existing systems, check for resources and provide resource estimates, make modifications, and enhancements to improve the performance. Must provide user training. This position requires strong analytical and problem solving skills; strong interpersonal and communication skills essential. Must have worked as Software Engineer for at least 2 years. Salary 36K. Apply in person or by resume to: Georgia Department of Labor, Job Order # 5566125, 1275 Clarendon Ave., Avondale Estates, GA-30002 or to the nearest Georgia Job Service Center.

ANOTHER REASON WHY COMPUTERWORLD RECRUITMENT ADVERTISING WORKS ...

Computerworld reaches large numbers of the computer job titles most companies recruit regularly.

Whether you're looking for programmers, software developers, systems analysts, engineers, IS directors, consultants, sales/marketing professionals, or just about any other kind of computer professional, Computerworld delivers the largest available audience of them.

Computerworld's Total Audience by Job Function

Function	of Computerworld's Audience...
Information Systems	501,523
Engineering	49,927
Sales/Marketing	31,036*
Corporate Management	31,376
End User/Other Professionals	6,083
Other	16,902
Total	629,204**

SOURCE: Skill Survey of Computerworld's Audience, June 1991.

* Includes 7,643 complimentary copies distributed to computer sales and marketing professionals.
** Total readers (not including 7,643 complimentary copies).

To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD
Where the qualified candidates look. Every week.

LOG ON TO A CAREER WITH MELDISCO

Meldisco, one of the largest footwear retailers in the country, and a major division of the Melville Corporation, has immediate openings in our State-of-the-Art MIS Area for:

*PROGRAMMER ANALYST

- 2-4 years programming experience on a large mainframe
- Working knowledge of CICS, COBOL II, OSJCL
- 1 year of DB2
- Good Communication Skills a Must
- Experience with Personal Computing, cooperative processing a plus

*NETWORK ADMINISTRATOR

- Knowledge of Novell 3.11 LAN Operations and Data Communications
- Wide-Area Networking
- Bridge, Router and Gateway
- Netbios, IPX, SPX, AIX, TCP/IP
- In-depth knowledge of PC technology, DOS, OS/2 and software packages including WordPerfect 5.1, Lotus 1-2-3, Oracle, XDB/CICS, technical and functional support
- Network system design and implementation

We offer a challenging environment in a company known for its "priority on people" and its community involvement.

The Meldisco facility is situated in an attractive, park-like setting in Northern New Jersey. In addition to highly competitive salaries and a friendly professional atmosphere, we offer a benefits package that includes a company subsidized cafeteria, medical, dental and life insurance, a 401K plan, tuition assistance, 10 paid holidays plus vacation. Our associates enjoy many company-sponsored activities and self-improvement programs as well as an on-premise fitness center.

Please send your resume with salary requirements to: MELDISCO, Div. of Melville Corporation, Recruitment Supervisor, DEPT CW, 933 Macarthur Blvd, Mahwah, NJ 07430. We are an equal opportunity employer M/F.

SYSTEM ANALYST/SOFTWARE ENGINEER. Must have a B.S. degree in Computer Science or equivalent. To analyze, design, develop, and implement computer software applications for Human Resources Management, Image Processing, Statistical Application, Inventory Control and Data Security Systems. Must be able to implement systems conversion and provide operating systems support. Must be proficient in reporting systems for Human Resources using FORTRAN, DATATRIEVE, Data Security Systems using TURBO-C, and COBOL. Must have demonstrated knowledge of VAX/VMS with experience in systems design and analysis using FORTRAN, COBOL, and ALL-IN-1 systems applications. Must have ability to develop batch and on-line programs; Working knowledge of IBM-PCs and UNIX operating system. Must have worked in the capacity of a Software Consultant/Software Engineer for at least 2 years. Salary 36K. Apply in person or by resume to: Georgia Department of Labor, Job Order # GA 5564391, 1535 Atkinson Road, Lawrenceville, Georgia 30243, or to the nearest Georgia Job Service Center.

Systems Analyst: Analyze, design, develop, test and maintain application software on mainframes and Local Area Networks using C/C++, Microsoft Windows Software Development Kit, Toolbook, or other Graphical User Interface development environment. Use work flow reengineering concepts to design new business processes/enhance existing ones in consonance with firm's overall information strategy and architecture. Design and develop software to support these processes. Knowledge of Data Modeling using dataflow diagrams and entity-relationship diagrams, Data Normalization, and Structured Flowcharting. Knowledge of C/C++, Btrieve, Netware, object-oriented techniques, SQL, Windows application Programming Interface essential. Minimum requirements: Bachelor's Degree in Information Systems or Computer Science, plus two years experience in software development. \$39,000 per year. Apply in person or by resume to: Georgia Department of Labor, Job Order No. GA5568621, 1235 Clarendon Avenue, Avondale Estates, Georgia 30002, or to the nearest Georgia Job Service Center.

SYSTEM ANALYST/SOFTWARE ENGINEER. Must have B.S. degree in Computer Science or equivalent. To analyze, design, develop, and implement Software Applications for General Ledger, Personnel Management Systems, Financial Accounting, Inventory Control, Marketing Management, Personnel Information Management Systems, Stock Surveillance Systems, and Preventive Management Systems. Requires mastery of MVS/XA, AOS/VSE, OS/2 and DOS environments. Must have demonstrated knowledge of IDMS/R, ADS/O, ADS/A, Powerhouse, IDMS/DC-UCF, OLM, OLO, SOL database, INTERACT, D6/DBMS, INFOS II, dBase III++, CLIPPER, TAB and PRESENT. Strong analytical and problem solving skills required; strong interpersonal and communication skills essential. Should have worked as Software Engineer for at least 2 years. Salary 36K. Apply in person or by resume to: Georgia Department of Labor, Job Order # GA 5564630, 1535 Atkinson Road, Lawrenceville, GA 30243, or to the nearest Georgia Job Service Center.

CONSULTANTS

Computer Power Group, an international consulting firm seeks professionals with the following expertise:

IN NEW JERSEY

- DISASTER RECOVERY
- SENIOR P/A - FOCUS
- P/O WITH AS/400, RPGIII, QUERY
- C, OS, DBM
- EASEL WITH WORKBENCH
- SR. ANALYST w/ MICROSOFT PROJECT

Please contact Norma Lewis or Laura Kohler at (908) 494-9333 or FAX (908) 494-9305. COMPUTER POWER GROUP, 10 Parsonage Road, St. 212, Edison, NJ 08837

IN NEW YORK

- COBOL, CICS, DB2
- VISUAL BASIC, CLIPPER, & REL. DATABASES
- TESTERS
- HP, UNIX, & ORACLE

Please contact Eric Bauman at (212) 575-2225 or FAX (212) 382-0879. COMPUTER POWER GROUP, 1500 Broadway, New York, NY 10036

SYSTEM ANALYST. Must have a B.S. Degree in Computer Science or equivalent. To analyze, design, develop, and implement software applications such as merchandise software, performance failure and quality assurance, human resource, purchase order and billing, payroll and personnel information, banking, billing and spare parts system under MVS/ESA, MVS/XA, DOS/VSE, VM/XA, AOS/VSE, VAX/VMS, MS-DOS using IBM 3090, 4381, 9375, VAX 6230, DG MV 4000, PC. Must have good working knowledge of CSP/AD, DB2, SQL/DS, CICS, COBOL, COBOL II, VSAM, TSO/ISPF, ROSCOE, PANVALET, ICCF, INFOS, and must be able to use these tools for system design and analysis. Must be able to develop batch and on-line programs, and to generate documentation. Good working knowledge of debugging tools such as CEDF, INTERTEST, XBUG, FILEAID, ABENAIID. Must have worked in the capacity of Software Engineer/Software consultant for at least 2 years. Salary 36K. Apply in person or by resume to: Georgia Department of Labor, Job Order # 5566188, 1275 Clarendon Ave., Avondale Estates, GA-30002 or to the nearest Georgia Job Service Center.

Recruit The Best!

Place your ad in regional or national editions of Computerworld's Computer Careers section. For more information, call Lisa McGrath.

800-343-6474
(in MA, 508-879-0700)

Consider The Benefits...

...at BUCK CONSULTANTS, INC., one of the world's leading actuarial and employee benefits consulting firms. We're currently seeking dynamic individuals for challenging positions at our Corporate Headquarters Systems Dept. in Secaucus, NJ.

PC SYSTEMS ANALYSTS

You will be responsible for implementation of employee benefit systems using WINDOWS, SQL, and LANs. To qualify, you'll need 4-10 years experience with PCs and a minimum of 3 years with "C". Experience with LANs, WINDOWS, and SQL databases a plus.

AS/400 PROGRAMMER ANALYST

Successful candidate will possess 3-5 years experience using RPG/400 and CLP in developing and maintaining interactive/batch applications. Systems 38 experience and employee benefits background a plus.

You'll enjoy a state-of-the-art environment along with a competitive salary and excellent company-paid benefits package including an annual bonus. Send resume to: LZ, Buck Consultants, Inc., 500 Plaza Drive, Secaucus, N.J. 07096-1533. EOE M/F/H/V

**BUCK
CONSULTANTS**

Providing Employee Benefits And Actuarial Services Since 1916

IS PROFESSIONALS

Opportunities abound in the Southeast for talented, experienced (3 year minimum) Programmers, Senior PA's and DBA's. Join our talented staff and work in state-of-the-art environments on challenging projects.

- COBOL, CICS, DB2
- DB2, CSP
- Telon, DB2
- Telon, IMS
- CICS, COBOL, Banking
- VAX, Oracle, SQL tools
- SQL/DS, CICS
- RS6000, Ingress
- M&I Commercial Loan
- M&I Deposit
- CICS, DL/1
- Hogan Project Manager
- VAX, Fortran, Smartstar
- AS400/VAX Trust Accounting

We offer excellent compensation, relocation assistance, full benefit package and education reimbursement. Send your resume TODAY!



**AMERICAN
COMPUTER
PROFESSIONALS**
140 Stoneridge Drive
Suite 350
Columbia, SC 29210
800-933-9227
FAX: 803-779-1955
Equal Opportunity Employer

PROGRAMMER/ ANALYST POSITIONS SYSTEMS PROGRAMMERS

With at least 3 years experience in

- IMS DB/DC, DL1
- CICS
- NATURAL
- ADABASE
- PL1
- COBOL
- DB2/SQL
- TANDEM
- VM/VMS
- RPGII/III
- VAX/VMS
- IDMS/ADS/O
- FOCUS
- C LANGUAGE

Please Send Resume to:

**MSI Management
Solutions, Inc.**
1416 South
Third Street,
Louisville, KY
40206
502-634-1387

Design, development and implementation of proprietary administrative application software, including tools for creating window based electronic forms, for multiple computer interactive information networks. Work performed on mainframes in C and Pro C in Oracle under UNIX System V. 40 hrs./wk., 9-5, M-F, \$40,088/yr. Required: Master's Degree in Computer Science, Physics or Mathematics and 2 yrs. exp. in job offered. Mail resume and copy of ad to: Department of Economic and Employment Development, 1100 North Eutaw Street, Room #212, Baltimore, MD 21201, Job Order No. 9150143, Job Location: Silver Spring, MD.

DATABASE ADMINISTRATOR

with strong FoxPro development experience to control, enhance, maintain and document enterprise database application for large social service agency. Create standards and procedures, manage data dictionary, control production environment, work with programmers, and train and support users in PC LAN environment. Competitive salary and benefits. Send resume to: Human Resources Department, Leake and Watts Services, Inc., 463 Hawthorne Ave., Yonkers, NY 10705

Over
629,000
computer
professionals
read
Computerworld
weekly.

SYSTEMS ENGINEER, PRINCIPAL COMMUNICATION SYSTEM DESIGNER: Act as a liaison to outside vendors to establish inter-product connectivity; review customer's request for proposals and provide a detailed response to the products ability or inability to meet requirements; plan and design new communication technology for on-line, real time applications for the lottery industry; determine the impact of applying new communication technologies resulting from research; provide concrete input to activities related to communication design standards, and gear such standards so that they are in keeping with established product strategies and tactics; enhance and/or alter current communication software; bring into context new or existing technologies; formulate and review product strategies, and outline timeframes of technological fit that are used in establishing the company's two to five year product strategy and planning; adhere to, advocate and provide concrete input to software development rules and procedures established by the Software Engineering Organization; maintain awareness of new and existing technologies in the industry and the company's competition that are directly or indirectly related to the company's current and future product directions; effectively interface with all organizations of the company, and act as a liaison or contact point to other companies on both technical and non-technical matters; effectively ensure the interfaces between the hardware, software and systems are properly defined and meet appropriate standards; lead research projects that make use of "outside" communications products or technologies that may or may not be in use in current or past products; provide concrete return on investment proposals and feasibility reports to assist management in making business decisions in the future use of such technologies, internationally as well as domestically; periodically publish technical papers in industry publications that analyze or introduce new technologies to the industry; lead more junior Software Engineers in the formulation of detailed functional, internal and database specifications; provide more junior Software Engineers with methodologies and effective techniques for software engineering or problem troubleshooting and resolution. REQUIREMENTS: Bachelor's Degree in Electrical Engineering, Computer Science or related field; Master's Degree in Electrical Engineering, Computer Science or related field or equivalence of five years experience in communication systems development for each year of missing Master's education; must have intimate working knowledge of OSI transports, TCP/IP, X.21, X.25 and X.28 protocols in an international, high-technology environment. Must be willing to travel up to 50% both domestically and overseas. Must have good interaction skills and sensitivity to various cultures. HOURS: 8:30 A.M. - 5:00 P.M. RATE OF PAY: \$90,000.00. CONTACT: R.I. Job Service, 101 Friendship Street, Providence, R.I. 02903. Case No. 65. Attn: T. Salabert.

SDC

COMPUTER SERVICES

Our offices in Florida are currently recruiting for the following contract employment opportunities:

**COBOL, Eztrieve, Panvalet
IMS DB/DC, DB2
ORACLE/SQL, UNIX
DBS Millennium, M&D
AS/400, RPGIII/400
CPCS/Banking
PASCAL/MS-WINDOWS
SUPRA, MANTIS, CM**

Excellent Rates & Benefits

Please contact:
1571 Robert J. Conlan Blvd, NE
Suite 120
Palm Bay, FL 32905-3562
(407) 951-1416
Fax: (407) 951-0703

Manager, Financial Systems: Design and develop financial information systems. Analyze procedures, statistics and issues to identify and refine data. Develop computer systems to meet information and reporting needs. Confer with management and organizational units to determine specific output requirements. Design and improve data handling systems to increase capacity and effectiveness. Study information systems responses to management needs. Prepare technical reports and instructional manuals on establishment and functioning of complete operational system. Provide system maintenance. Must have a Bachelor's degree in Business Administration and two years experience in the position or two years as a Finance Director/Finance Analyst. A Master's degree in Business Administration plus one year experience may be substituted for a Bachelor's degree and in Business Administration plus two years experience. \$25,000/yr. 40 hrs./wk., 9-5. Submit RESUME ONLY to JOB SERVICE OF FLORIDA, 701 S.W. 27th AVENUE - ROOM 15 MIAMI, FL 33135-3014. Ref: Job Order# FL 0681405.



VIRGINIA LOTTERY

**Senior Programmer/
Analyst #304
\$32,910 - \$50,248
(Richmond)**

An exciting opportunity exists for a conscientious individual to support our on-line gaming systems. As a member of our team you will perform analysis, design, development and systems maintenance for a distributed network of IBM System/88's.

QUALIFICATIONS PREFERRED: Proficiency with "C" programming language required. Motorola 68000 Assembly experience preferred. Experience with Intel 8051 Assembly, COBOL, on-line transaction processing, message switching, structured design, on-line programming techniques, and point-of-sale terminal code or video graphics programming. IBM System/88 or Stratus experience is preferred with background in DCLC or other communication protocols. Strong verbal and written communication skills plus. Degree with major course work in Computer Science, Information Systems, Business Administration, or related field.

TO BE CONSIDERED A COMPLETED STATE APPLICATION FORM INDICATING THE POSITION TITLE AND NUMBER FOR WHICH YOU ARE APPLYING MUST BE RECEIVED BY THE HUMAN RESOURCE OFFICE, STATE LOTTERY DEPARTMENT, BOOKBINDER BUILDING, P.O. BOX 4689, 2201 WEST BROAD STREET, RICHMOND, VA. 23220 BY 5PM OCTOBER 30, 1992. THE SUCCESSFUL CANDIDATE MUST PASS A BACKGROUND INVESTIGATION.

A RESUME SUBMITTED WITHOUT A STATE APPLICATION FORM WILL NOT BE CONSIDERED. STATE APPLICATION FORMS MAY BE OBTAINED FROM ANY VIRGINIA STATE AGENCY, ALL VIRGINIA EMPLOYMENT COMMISSION LOCATIONS OR BY CALLING (804) 367-9234.

AN EQUAL OPPORTUNITY EMPLOYER

CONSULTING OPPORTUNITIES

ESA's clients are forward-thinking corporations being re-engineered for the 1990's and who are now making extensive use of outside MIS consulting resources. We need talented MIS professionals skilled in the following disciplines:

MAINFRAME
CSP/DB2
CSP/SQL-DS
CICS/COBOL/DB2
TELON/DB2
IDMS/CICS
IDEAL/DATACOM
NATURAL/DB2
NATURAL/ADABAS

AS/400
RPG/COBOL/400
JDE, MACPAC
BPCS, SFTW/2000

TANDEM
TAL/TACL

CLIENT SERVER
UNIX, OS/2
INFORMIX, 'C'
NOVELL/CLIPPER
ORACLE, SYBASE

Exciting assignments and permanent job opportunities are available NATION-WIDE. Our benefit plan includes health/major medical, life insurance, dental, paid vacation, long term disability, & bonuses, in addition to the rewards that come from the opportunity to work with some of the finest professionals in the industry. Please phone/fax/write: **Enterprise Systems Associates, Inc.**, 2255 Glades Rd., Suite 324-A, Boca Raton, Florida 33431.



Ph: (800) 932-2372
Fax: (800) 942-0362

Offices in: Kansas City, St. Louis, Boca Raton, FL.

FLORIDA OPPORTUNITIES CONTRACT/PERMANENT

- UNIX/C, Oracle, CASE Tools, GUI, Informix
- DB2, COBOL, Tandem/SCOBOL
- AS/400, JD Edwards, HP3000
- MVS, COBOL, 4GL, and/or M&D, CICS
- VAX/VMS, Pathworks (PCSA), AutoCAD
- IDMS/ADSO, COBOL, Financial Applic.
- OS/2, Sybase, EASEL



**OCS CONSULTING
SERVICES, INC.**

135 W. Central Blvd., Suite 840
Orlando, Florida 32801
1-800-393-6274 Ph 407-839-4707 Fax 407-839-4337

SYSTEM ANALYST. To design, develop and implement software systems in C language under UNIX, SCO UNIX operating system on AT&T 3B2, Dell 486, Sun Workstations, IBM-PCs under MS-DOS, IBM mainframes under MVS/VM. Requires thorough knowledge of UNIX system call utilities such as Make, Lex, SCCS, curses library, screen handling and generating hardware to create menus and forms. Knowledge of Basic Networking Utilities, TCP/IP, LAN, SNA, HLLAPI, API and APPC required. Must have experience in writing software applications in Windows, creating software tools using shell scripts. Must be able to interface data communication between UNIX systems and other computers. Relational database (SQL) experience essential; software applications developed using C-tree desirable; able to assume System Administrator responsibilities; able to port software across different platforms. Excellent Communication skills and willingness to relocate anywhere in USA. Must have B.S. Degree in Computer Science or equivalent. Must have 2 years experience as Software Engineer. Salary 36K. Apply in person or by resume to: Georgia Department of Labor, Job Order # 5566151, 1275 Clarendon Ave., Avondale Estates, GA 30002 or to the nearest Georgia Job Service Center.

NY/NJ/PA/CT/FL DC/GA/KC/TX CONSULTING OPPORTUNITIES

Immediate F/T and Consulting
Positions Available:

- TANDEM
- ADABAS
- OS/2 WINDOWS
- IMS DB/DC DB2
- STINGRAY, PC EMULATOR



LANCASTER SYSTEMS
1600 Harrison Avenue
Mamaroneck, NY 10543
(914) 698-6869
Princeton, NJ 08540 (609) 497-4918
FAX (914) 698-5556

COMPUTER CAREERS EAST

CTG is where you want to be

At CTG, the atmosphere is charged with challenge and excitement as we develop quality based breakthrough solutions into the 90's.

Our talented team members are supported by innovative career management system (CMS490) which offers:

- Comprehensive compensation
- Full feature benefits
- Educational opportunities

Second to none is CTG's IQ (Innovations in Quality) program providing the staff member the opportunity to be with a firm that is globally competitive.

CTG is making an impact in the global marketplace by experiencing phenomenal success, therefore creating a diverse array of career opportunities for knowledgeable professionals.

Current opportunities exist for those experienced in the following areas:

Oracle SQL	MICRO FOCUS COBOL	AIX
IMS DB/DC	Information Engineering	CSP
DB2	AS/400 RPG	ADABAS/NATURAL
C/UNIX Windows	Mac Development	MSA
NOMAD	CICS	Model 204
IDMS/ADSO	OS/2, Presentation Mgr.	Telon

Those wanting to make an impact on their career should send a resume to:

Southeast Region Recruiting Manager Department CW 9/92 100 Colony Square Suite 1900 Atlanta, GA 30361 FAX (404) 870-1555	Midwest Region Recruiting Manager Department CW 700/92 8044 Montgomery Rd Suite 200 Cincinnati, OH 45236 FAX (513) 793-6793
---	--

Make voice mail contact:

1-800-992-5350
Box 8074

1-800-992-5350
Box 7739

CONSULTING PRACTICE LEADER HRIS SYSTEMS INTEGRATION

Requires a proven track record managing large-scale packaged software implementation projects and technical staff in a multi-project environment. An expert-level understanding of systems development life-cycle and contemporary methodologies, with hands-on experience preparing project deliverables is also required. In addition, you must be a proven leader with the ability to acquire, motivate and manage a superior-level multi-disciplinary staff. Experience with CASE technologies, re-engineering methodologies and client/server architectures and applications is important. Expertise in HRIS applications desired, but not mandatory. PeopleSoft experience a definite plus. This is an executive-level position reporting to the founder, president and CEO. Please respond in confidence to: CW-09040, Computer World, Box 9171, Framingham, MA 01701-9171.

Take Your Career To New Heights With USAir.

USAir, an innovative and progressive leader in the airline industry, has the following openings in its Arlington, Virginia Information Services Department in various business areas:

**SENIOR & MID-LEVEL
PROGRAMMER/ANALYSTS**
Qualified candidates should have a minimum of 2 years COBOL II programming experience with DB2 and/or CICS. Several positions require specific experience with: CASE (KWI/ADW), IE (James Martin), and Airline Marketing/Sales applications. Additional positions are available for candidates with PLI and/or PC application experience.

SENIOR PROGRAMMER
Individual will perform MERLIN maintenance, enrich existing functionality and assist in customer support. Candidate should possess 5 years programming experience in application development. ADABAS database and NATURAL fourth generation language proficiency desired. MERLIN, DEC, VMS and UNIX systems knowledge helpful.

USAir offers competitive salaries, excellent benefits including liberal travel privileges. For consideration, please forward your resume, indicating position of interest to: **USAir, Employee Relations**
Dept., RE: IS Vacancies, 3800 N. Liberty St., Winston-Salem, NC 27105. An EEO/AA Employer. Principals only.

USAir

Southeast

Computer Consulting Group, has immediate openings on its southeast consulting staff for talented Programmer/Analysts. We're especially seeking:

- IMS or CICS (BANKING or MANUFACTURING A PLUS!)
- DB-2
- INGRES
- UNIX SYSTEM MANAGER
- CATIA/CATGEO
- PC Support Specialist

**Computer
Consulting
Group**

Contract Professional Services

4109 Wake Forest Rd
Suite 307
Raleigh, NC 27609

1-800-222-1273
FAX (803) 738-9123
Member NACCB

Put Your Ingenuity to the Test

Seltmann, Cobb & Bryant, Inc. is not only a management and data processing consulting firm but is also in the business of applying the right people to the right tasks in order to meet the needs of our clients and achieve the results they seek. We are currently looking for individuals possessing any of the following skills to fill PROGRAMMER ANALYST positions in our locations throughout the country:

- | | | |
|-----------------|--------------|------------|
| • PC Experience | • CICS | • INFORMIX |
| • GUPTA | • IDMS | • UNISYS |
| • TELON | • DB2 | • AS400 |
| • COBOL | • CASE TOOLS | • S/38 |
| • IMS DB/DC | • UNIX | • RPG |

Seltmann, Cobb & Bryant, Inc. also offers a comprehensive insurance package, employee stock option plan and a 401K program. Take your first step toward making your career complete by sending or faxing your resume to:

Seltmann, Cobb & Bryant, Inc.
1365 W. Briarbrook Road
Memphis, TN 38138
Fax: 901-754-8463 1-800-221-1640

Southeast High Tech Career Fair

At Digital Systems Consultants (DSC), we're a software services company specializing in VAX/VMS and UNIX applications. With this highly focused concentration, DSC has become a recognized industry leader serving a wide range of national and multinational clients. As part of our outstanding team, you'll work on diverse and challenging projects ranging from commercial, engineering and scientific applications.

WHEN YOU'RE THIS FOCUSED, THE FUTURE IS EASY TO SEE.

If you're looking for an excellent career opportunity, you'll like what you see at DSC. Candidates should have 2+ years of experience in at least one of the following skills:

- VMS System Management
- VAXSet
- Rdb/VMS
- TEAMWORK
- VAX BASIC
- VAX COBOL
- Ada
- VAX or UNIX Ingres
- PowerHouse



Digital Systems Consultants, Inc.
VAX/VMS and UNIX Software Services

We also offer an excellent compensation package with a revenue sharing plan, comprehensive benefits, in-house training opportunities and ample growth and advancement potential. We encourage software professionals to see us at the Southeast High Tech Career Fair in Atlanta on September 21st and 22nd at the Embassy Suites Perimeter. Or for further information, send or FAX your resume to: Digital Systems Consultants, Inc., Dept. CW92192, Center One Suite 200, 1100 Johnson Ferry, Atlanta, GA 30342; Phone (404) 843-8577; FAX (404) 843-2433. EOE.

Building On Strengths

"Aggressive growth with thoughtful response to new opportunities"

In the 92 year history of Equifax, Inc., 1992 stands out as a year of accelerated activity designed to implement our growth strategy and solidify our position as The Information Source for business, industry and government. We credit our success with the ability to move aggressively on several fronts in thoughtful, measured response to new opportunities and changing markets. As we add to our team of professionals, current opportunities exist for those experienced in the following areas:

• **TELECOMMUNICATIONS SPECIALIST**
VAX/VMS, C, Unix, TCP/IP, software development and programming experience

• **PROGRAMMER ANALYSTS**
"C" Unix, MS/DOS, Windows, SQL, TCP/IP, VAX/VMS

COBOL, Natural, CICS, MVS/JCL, ADABAS Assembler (BAL), CICS/MACRO, VSAM

• **DATABASE SPECIALIST**
Installing and tuning ADABAS, Natural, Predict, ADASQL. Physical file design, security, restart/recovery. 2-3 years Oracle DBA experience, C programming experience, SQL, MS/DOS.

Positions require minimum 3+ years programming, strong analysis/design, and proven effective communication experience.

Strong growth makes Equifax the ideal place for your career development. Openings located in Alpharetta. We offer an outstanding salary/benefits package plus the opportunity to advance with an industry leader. For more information, make plans to visit us at the Equifax Suite, or send your resume to: Equifax, Inc., Human Resources, Dept. SEN-HRD-921, Equifax Technology Center, P.O. Box 740006, Atlanta, GA 30374-0006.

EQUIFAX

We are an
equal opportunity employer

The
Information
Source

Data Processing Professionals

**Consider
IT**

**Your Strategy
for Success**

Consider IT (Information Technology), consider its role in managing the information explosion, and then consider the personal and professional regards of being a key part of it all.

We're Adia Information Technologies (formerly Comp-U-Staff), a national data processing consulting firm and we're committed to making IT...Information Technology...your strategy for career success. With a Fortune-listed client base spanning over 50 cities and virtually every industry, we're positioned to offer unparalleled opportunities to professionals with a special combination of business and technical skills.

Right now, we're seeking professionals with technical expertise in:

- ▲ COBOL/CICS/VSAM
- ▲ DB2, CICS
- ▲ IMS DB/DC
- ▲ IDMS, ADS/O
- ▲ AS/400, RPG, COBOL
- ▲ DEC VAX, RDB, ACMS
- ▲ UNIX/C, SYBASE
- ▲ C++, X-WINDOWS, GUI
- ▲ INFORMIX, ORACLE
- ▲ HOGAN LOANS/DEPOSIT
- ▲ ALC/AFP
- ▲ ADABAS/NATURAL
- ▲ AREV
- ▲ CASE (ADW, IEF, ETC.)
- ▲ OS/2 PM
- ▲ IDEAL, DATACOM
- ▲ DBA'S & S/P'S
- ▲ CADAM, CATIA

If you can appreciate a forward thinking environment with a distinct "promote from within" policy, the latest training resources, and exceptional compensation & benefits, we invite you to forward your resume or call:

Adia Information Technologies
5901 P'tree Dunwoody Rd. Suite 442-C
Atlanta, Georgia 30328
Attn: Dave Thompson
(404) 393-4522 (404) 393-4819 (fax)

In Florida contact Greg Reno @ 800-877-9745, 407-875-0479 (fax)
In Baltimore/D.C. contact Jody Mills @ 410-828-0788,
410-321-7918 (fax)
An equal opportunity employer



ADIA

INFORMATION TECHNOLOGIES SM

The Power That Makes IT Work

Give our clients the competitive edge.

GE Consulting Services enables Fortune 500 client companies to effectively utilize information systems technology tools, techniques, and resources.

Our consultants will find both personal and financial reward in providing solutions to our clients. They employ a wide variety of technology including:

- | | |
|-----------|-----------------|
| C,C++ | IEF, IEF |
| UNIX | NOVELL |
| ORACLE | DBS, M&D, MSA |
| INFORMIX | PARADOX, FOXPRO |
| SYBASE | ADA |
| INGRES | SUN |
| XWINDOWS | MOTOROLA 680X0 |
| OS/2, PM | DOD-STD-2167 |
| DB2,CSP | VERDIX VADS |
| IMS | CONVERSANT |
| IDMS/ADSO | VAX RDB |
| CICS | AS400 |

Opportunities exist for persons with these skills at GE Consulting Services offices located in the following cities:

- | | |
|-------------|-------------|
| Tampa, FL | Orlando, FL |
| Atlanta, GA | Houston, TX |
| Dallas, TX | Raleigh, NC |

If you are interested in exploring full-time or hourly opportunities with a leader in the global marketplace, fax or mail your resume for immediate consideration to: GE Consulting Services, Department TJF, 9000 Central Park West, #240, Atlanta, GA 30328. FAX (404) 698-4670



GE Consulting Services

An Equal Opportunity Employer

Data Processing * Engineering
Telecommunications

Southeast High Tech Career Fair

ATLANTA

September 21-22
Embassy Suites Perimeter

Participating companies:

DCA
TSG
Hertz
Equifax
TelTech
TRECOM
The Registry
CSC Partners
Consultec, Inc.

American Software
Microsoft Corporation
GE Consulting Services
Solvay Pharmaceuticals
Adia Information Technologies
Digital Systems Consultants, Inc.

Equal Opportunity Employment Fair

Please send your resume to: SEHT Career Fair,
PO Box 1458, Dept. CWA, Coppell, TX 75019

**THE LEADING TECHNOLOGY FAIR
FOR THE SOUTH**

GIVE YOUR CAREER THE COMPETITIVE EDGE

As an experienced computer professional, you know what's needed to stay sharp. You need to build on your experience, be on top of new technology and find the challenges which keep you motivated. You can accomplish this as a consultant with TRECOM while experiencing the best of both worlds—a position with an established and well-respected company, and the challenges of working on new projects with leading fortune 500 companies.

Senior Systems Analysts
Database Design/DBA
Programmer/Analysts
Programmers
SME Landline/Cellular

Qualified candidates will need at least two years experience with any of the following:

- 4GL • GUI
- IMS DB/DC • DB2 • CICS
- ORACLE • UNIX
- VAX/Rdb • COBOL • BASIC
- HOGAN

These openings are within the telecommunications and financial industries, offering involvement from start to finish including analysis, design, coding, maintenance and testing. Please visit us at the Job Fair or respond to: TRECOM Business Systems, Inc., 2150 Parklake Drive, Suite 350, Atlanta, GA 30345. Phone 404/621-0300 or 800/621-0310; FAX 404/939-0310.

TRECOM consultants earn excellent compensation which includes medical/dental insurance, a 401k plan, tuition reimbursement and relocation assistance. We are an EEO/AA Employer.

TRECOM

Business Systems Inc.

MARKETPLACE

Sidestep customization pitfalls

Preventive measures can help ensure software usability, avoid headaches



BY JOEL GILMAN
SPECIAL TO CW

One of the more hazard-ridden projects an information systems manager can engage in is vendor customized software. You really have to take some precautionary measures if you don't want to end up wasting a lot of money on an unusable system or wasting a lot of time waiting for the final product. Some people have even ended up in court arguing that they never got the system they originally contracted for.

Although there are no hard-and-fast rules — system customization is bound to be a bumpy ride — there are specific problems that notoriously crop up. Keep them in mind and you are sure to avoid some unneces-

sary headaches.

▶▶ Write clear RFPs

Drafting a request for proposal (RFP) is the first step in any system customization. Unfortunately, most RFPs end up too long and too vague to be meaningful. Considering that this is where you determine what you want the eventual system to be, you should take great pains to be thorough.

In addition, the contents of RFPs are legally binding once they are included in the contract.

For a better idea of what you want to include in the RFP, compare the features you need in the new system with the shortcomings you've found in the off-the-shelf software you've rejected. This will give you a base to start from and ensure that you get better proposals from vendors.

▶▶ Two-part contracts

A well-drafted contract can mean the difference between having to pay for a system you don't want and being free to walk away if you're not completely satisfied. So make it count!

For optimum flexibility, divide

the contract into two phases: the prototype and design phase, and the implementation phase.

During Phase I, you will be bound to paying the vendor for prototypes and a customized design. However, once the design is finished, you are in no way obligated to follow through with the implementation. In fact, you could even back off for a little while and compare the customized software with prepackaged software and see which one works better for you.

Until you sign on for Phase II, you are still evaluating the product and have not committed to it. You've spent a lot of money to get to this point, so don't be afraid to speak up if you don't like what you see.

Once you have agreed to the design, Phase II begins, and there is no looking back.

▶▶ Insist on a prototype

During contract negotiations, insist on a system prototype — don't settle for a written spec or design document. With the dummy system, users can interact with the screens and commands and suggest changes for the final system.

Specs simply spell out whether a system will perform a given function, no matter how clumsily or slowly. If users aren't happy with the final system, they have no legal recourse if the vendor can prove it meets the spec. What's more, many courts are poorly equipped to deal with this type of dispute.

Because users can actually use a prototype, they can see right off the bat if a function works well or "just works." The downside is that you have to pay for the prototype. The screen design will be used in the final product, but the underlying software — called scaffolding — is only used for the prototype and will be discarded after the design is approved.

▶▶ Review design thoroughly

Make sure key users thoroughly evaluate the design before agreeing to implementation. One frequent problem is that key users are not involved. Even with a well-designed prototype, an unsatisfactory system can be the result if key users don't take the time to thoroughly evaluate it.

This is a problem purely for the user organization: Key users have to be encouraged and motivated to spend weeks evaluating the prototype.

▶▶ Get a source-code license

If you proceed with the custom system, insist on a source-code license. If the vendor refuses, find a new vendor or use prepackaged software.

Refining and modifying software takes time and can become costly if you can't make changes to the source code yourself.

▶▶ Document and train

Don't skimp on documentation and training. If this is a custom system, you won't be able to pick up a how-to manual from the local bookstore. All your information on the system will come from the vendor, so be sure the vendor provides you with adequate documentation.

How do you know if it's adequate? Ask to see a manual that was written for another customer. Reading this documentation from cover to cover can tell you much about the vendor and the product.

Similarly, be sure the vendor provides training, and be sure to give your people adequate off-site training time.

One final tip: Remember to negotiate for training at the contract stage. Many buyers forget to ask or only vaguely mention it to the vendor. If you don't ask, you don't get, and factoring it in later could be more expensive.

Gilman is a Seattle-based attorney who practices computer law.

Buy/Sell/Lease

New/Reconditioned digital Equipment

Whatever your requirements are for Digital Equipment, call CSI first! Buying, selling, trading, leasing, consignments - we do it all!

CSI sells all equipment with a 30 day unconditional guarantee on parts and labor and is eligible for DEC maintenance.

Offering systems, disk drives, tape drives, printers, terminals, memory, options, boards, upgrades and many more.

Distributors Wanted

CSI Compurex
Systems, Inc.
83 Eastman St.
Easton, MA 02334
1-800-426-5499
In Mass. (508) 230-3700
FAX (508) 238-8250

WANTED: Used Macs!

• We'll pay you top-dollar cash for used Mac equipment! Call for quote.
• We also sell full refurbished Macs at up to 55% discounts w/1-year warranty! "Our 11th year!"

RENTEX (800) 545-2313 dept 55

Refurbished High-Performance Laser Printers...

Direct from the Manufacturer. Now, you can move up to laser sharp quality and performance for all your high-volume applications with new low pricing on refurbished 2200 (L-19, L-26, L-27) laser printers. • 103 PPM • 24-Hour Duty Cycle • Certified for Siemens Nixdorf maintenance • Over 1.5 million feet of monthly output

Plus our **Guaranteed Buy-Back Program** lets you invest in a refurbished 2200 laser printer today and trade up to a new printer one year from your purchase date. We'll buy back your 2200 and give you a sizable trade-in allowance toward your new system.

Three Convenient Payment Options
• Purchase • Lease • Short Term Rental

Need more details? Call us today!

Siemens Nixdorf Printing Systems, L.P.
Refurbished Printer Program
(609) 751-6974 (8am - 5pm EST)

DEMPSEY. WHERE IBM® QUALITY IS SECOND NATURE.

• SERIES/1

BUY-LEASE-SELL

• 9370

• Processors

• RS/6000

• Peripherals

• INDUSTRIAL PC

• Upgrades

• ES/9000

For pretested equipment, flexible financing, configuration planning, technical support and overnight shipping call

• AS/400

• SYSTEM 36/38

• POINT OF SALE

(800) 888-2000.

Dempsey
BUSINESS SYSTEMS

Where IBM Quality Is Second Nature.

18377 Beach Blvd., Suite 323 • Huntington Beach,
CA 92648 • (714) 847-8486 • FAX: (714) 847-3149

CDIA
Computer Dealers
& Lessors Association

IBM

Authorized
Distributor Product
Integrator

IBM is a registered trademark of International Business Machines Corporation.

TAKE NO RISK ON RISC SYSTEM/6000

Choose: **DATA TREND** Inc.

RISC System/6000 Hardware: Complete systems, upgrades, trades, peripherals, parts
 RISC System/6000 Services: Series/1 to RS/6000 Migration, AIX Support/Consultation, Application Re-engineering, Consolidation Services, Data Conversion Services
 RISC System/6000 Engineering: Custom Re-configuration, Refurbishment, Complex Systems Integration, Cable Systems Design/Installation, Field Installation, Board Level Repair, Project Packing Services, Configuration Documentation

Enterprise Services

Enterprise-wide planning, Host Connectivity, Process Control, RDBMS Incorporation, Complex Systems Integration, Network Solutions, DAE Incorporation

BUY • SELL • LEASE

Series/1
 System 36/38
 AS/400

937X, 4300, 468X
 PS/2, Industrial PC

Call the "Reliability Company"

1-800-FOR-RISC
 (1-800-367-7472)

612-942-9830

10250 Valley View Rd., Suite 149, Eden Prairie, MN 55344

Datatrend...

IBM Business Partner
 IBM Industry Application Specialist
 IBM Subcontractor
 IBM DAE Enabler
 IBM Account Team Partner

REMEMBER...
 Datatrend is also
 World Leader
 in Series/1

CDLA

• Trade • Lease

IBM
SYSTEM 36/38
SYSTEM AS/400
RS/6000
4300

MEMBER OF **WAL**

* **SPECIAL LEASE RATES ON AS/400's**
 • Buy • Sell • New • Used

• Equipment Configured To Your Requirements
 • All CPU Upgrades

• IBM Warranty/IBM Maintenance Guaranteed
 • Disk • Terminals

• Flexible Lease Options Tailored to Your Needs
 • Printers • Tape

NEWPORT LEASING, INC.
(800) 678-9426
 2943 Pullman St., Santa Ana, Ca 92705-4818
 714/766-8476 / FAX: 714/766-9200

IBM IS A REGISTERED TRADEMARK OF INTERNATIONAL BUSINESS MACHINES INC.



The complete computer equipment dealer

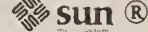
(714) 970-7000 (800) 745-1233 (714) 970-7095 FAX

BUY • SELL • RENT • LEASE

New & Used: Processors Peripherals Upgrades



ES/9000, 9370, 4381
 AS/400, RS/6000
 SYSTEM/88
 Point of Sale
 Banking
 CAD/CAM



Prime

UNISYS

XEROX



Stratus

HEWLETT PACKARD

amdahl

TANDEM

...and more!

ANAHEIM CORPORATE CENTER 5101 E. LaPalma Ave., Anaheim, California 92807

Directory of Classified Advertising Services

Computerworld's Used Equipment Listings are a quick and inexpensive way to advertise your used equipment. Advertising close is every Thursday (3PM, all continental U.S. time zones) prior to each Monday issue.

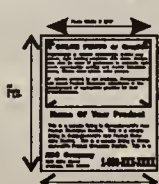
For more information, call:

Used Equipment Listings



Product Classified Advertising Department

Product Showcase



Computerworld's Product Showcase colorfully displays advertisers products in an easy to read, fixed-format. Advertising close is every Wednesday (3PM, all continental U.S. time zones) prior to each Monday issue.

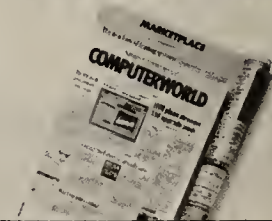
For more information, call:

Product Classified Advertising Department

Computerworld's Marketplace Pages allow readers to scan a variety of computer products and services sorted by useful classifications. Advertising close is every Thursday (3PM, all continental U.S. time zones) prior to each Monday issue.

For more information, call:

Marketplace Pages



Product Classified Advertising Department

Direct Response Cards

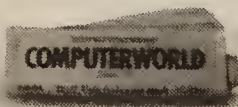


Computerworld's Domestic and Global Response Card packages give Computerworld's subscribers a quick and easy way to get information about a wide variety of advertised products and services.

For more information, call:

Direct Response Cards Advertising Department

For more information, please send or fax this coupon to:



Derek Hultsky
 Computerworld
 375 Cochituate Road
 Framingham, MA 07101

Send me information about Computerworld's:

- ☐ Used Equipment Listings
- ☐ Product Showcase
- ☐ Marketplace Pages
- ☐ Direct Response Cards

Name _____
 Title _____
 Company _____
 Address _____
 City _____ State _____ Zip _____
 Phone _____
 Fax _____

WE BOUGHT IBM®

By the Thousands

Computer Marketplace has bought and sold thousands of IBM systems, tape drives, disk drives, printers and peripherals. We are interested in offering top dollar for your RISC System/6000, AS/400 or System/36.

SYSTEMS & RENTALS

- RISC System/6000™ Systems
- Memory & Features
- AS/400™
- Network Solutions
- System/36
- PS/2

PERIPHERALS

- Controllers
- Disk Drives
- Tape Drives
- Memory Options
- Modems
- Displays
- Printers

BUY • SELL • RENT
 5 Offices To Serve You!

COMPUTER
MARKETPLACE
 (800) 858-1144

(714) 735-2102 FAX (714) 735-5717
 205 East 5th Street, Corona, CA 91719

RISC System/6000, AS/400 & PS/2, System/36 are trademarks of IBM.

REFURBISHED/USED

- UPS SYSTEMS
- STANDBY GEN SETS
- LIEBERT A/C
- ACCESS FLOORING

Computer Site Technologies, Inc.

262 S. Military Trail
 Deerfield Beach, FL 33442

1-800-226-0784
 305-425-0638

It's the Product Classified Pages

Reach Computer Professionals Where They Shop For:

- ☐ Buy/Sell/Lease
- ☐ Conversions
- ☐ PC Rentals
- ☐ Hardware
- ☐ Software
- ☐ Peripherals/Supplies
- ☐ Communications
- ☐ Time/Services
- ☐ Business Opportunities
- ☐ Used Equipment Listings
- ☐ Graphics/Desktop Publishing
- ☐ Bids/Proposals/Real Estate

(800)
343-6474
 (in MA., 508/879-0700)

9370/9221?

EXECUTIVE INFOSOURCE!

**BUY
 SELL
 LEASE**

MOST MACHINE FEATURES
 AND PERIPHERALS
IN STOCK

TELEPHONE: (708) 215-9370

FAX: (708) 215-9992 **CDLA** Member Computer Dealers & Leasing Association

Time/Services

OUTSOURCING, REMOTE COMPUTING, NETWORK MANAGEMENT SERVICES

- IBM MVS/XA Environment
- DB2, IDMS/R, Model 204, CICS and 4 GLs
- Professional Support Staff
- Experienced Migration Management Team
- Flexible Charges, Custom Solutions To Meet Your Needs
- AS/400, Asset
- Support Services
 - Media Conversion
 - Laser, LED & Impact Printing
 - Application Programming
- Network Management Services LAN/WAN/MAN/SNA/PBX
- Technical Support
- 24 Hours Per Day - 7 Days Per Week

May & Speh, inc.

1501 Opus Place - Downers Grove, IL 60515-5713
1-800-729-1501
 For More Information Contact: Tony Ranieri

REDUCE OPERATING EXPENSE WITH OUTSOURCING FROM NYNEX.

- ☐ IBM MVS and VM in a CICS Environment
- ☐ Full Complement of Systems Software
- ☐ Database Support Including DB2
- ☐ Remote Computing
- ☐ High Speed Laser Printers
- ☐ Intelligent Inserters and Direct Mail Capabilities
- ☐ Network Administration and Management
- ☐ Service Level Guarantees

For further information
 call: 1-800-545-9876

NYNEX

NYNEX Computer Services Company
 Two Blue Hill Plaza, Pearl River, N.Y. 10965

Remote Computing

MVS and VM Environments

- Facilities Management
- Consulting & Programming Support
- Functional Outsourcing

PRC

Strength Through Understanding

PRC Inc., 1500 PRC Drive, McLean, VA 22102

*Achieving
 Excellence in
 Customer Service
 for 25 Years*

Call us at
1-800-531-5489
 for a flexible,
 cost-effective solution,
 custom tailored to
 meet your needs.

REMOTE COMPUTING OUTSOURCING TIMESHARING

COMPUTER RESERVES will

- Nationally search for all platforms.
- Match your exact specifications.
- Locate multiple vendors.
- Help negotiate the lowest price.

1200 placements in 25 years.
 Never a charge to the buyer because
 our fee is paid by the seller.
CALL DON SEIDEN

1 800 882-0988 NJ 201 882-9700

USE OUR TECHNOLOGY TO YOUR FINANCIAL ADVANTAGE

Hundreds of Large and Small Companies Gain a Competitive Advantage by Using Comdisco's Nationwide Remote Computing, Information Technology Sourcing and Global Data, Voice and Video Network.

Featuring:

- IBM® CPUs and Peripherals
- Full Range of Systems Software
- Database and Applications Software Support
- Technical & Financial Planning
- Disaster Recovery
- Service Level Guarantees
- Capacity & Platform Transition Planning
- Financial Asset Management

Call: Bob Marino

800-227-6584

COMDISCO®

COMDISCO COMPUTING
 SERVICES CORP.
 430 Gotham Parkway
 Carlstadt, NJ 07072
 (201) 896-3011

The BoCoEx index on used computers

Closing prices report for the week ending September 11, 1992

	Closing price	Ask	Bid
IBM AT 339	\$400	\$600	\$200
PS/2 Model 30 286	\$500	\$900	\$300
PS/2 Model L40SX	\$1,000	\$1,200	\$900
PS/2 Model 55SX	\$900	\$1,300	\$800
PS/2 Model 60	\$600	\$900	\$325
PS/2 Model P70	\$1,650	\$1,900	\$1,200
PS/2 Model 80	\$1,400	\$1,600	\$1,100
PS/2 Model 95	\$3,000	\$3,500	\$2,600
Compaq Portable II	\$425	\$500	\$375
Portable III	\$500	\$600	\$250
Portable 386	\$1,100	\$1,300	\$900
SLT-286	\$700	\$900	\$400
LTE-286	\$800	\$900	\$500
Deskpro 286E	\$500	\$1,000	\$325
Deskpro 386/33	\$1,850	\$2,250	\$1,400
Apple Macintosh Classic	\$750	\$875	\$500
SE	\$725	\$775	\$500
IIX	\$2,450	\$2,750	\$2,000
IICI	\$3,100	\$3,600	\$2,460
HFX	\$4,000	\$4,400	\$3,500

INFORMATION PROVIDED BY THE BOSTON COMPUTER EXCHANGE CORP.

REMOTE COMPUTING • OUTSOURCING

- MVS/ESA
- MVS/XA
- DB2
- QMF
- CICS
- TSO
- IMS/DBDC
- VM/370
- DOS/VSE

OVER 150 SOFTWARE PRODUCTS

- DEVELOPMENT
- PRODUCTIVITY
- DEBUGGING
- PERFORMANCE

- TELENET
- SEARSNET
- TYMNET
- IBM INFORMATION NETWORK

EXTRAORDINARY CUSTOMER SERVICE MIGRATION MANAGEMENT

GIS INFORMATION
 SYSTEMS, INC.

815 Commerce Drive, Oak Brook, IL 60521

708-574-3636

New England
617-595-8000

PRODUCT CLASSIFIED PAGES

Where
 America's
 Computer
 Professionals
 Shop

(800) 343-6474
 (in MA; 508/879-0700)

ALICOMP, INC.

*The "Boutique" of
 the Computer
 Services World*

VM, MVS, VSE
 Outsourcing
 Timesharing
 Consulting

Remote and On Site
 Serving Clients Since 1960

(212) 886-3600

an affiliate of
 Amalgamated Life

**\$22/Hr. or
 \$1.50/line**

Applications Development

- CICS/DB2/IMS/COBOL
- AS/400: COBOL/SQL
- PC: 4GL/COBOL/C

Free Quote. Excel. References. 12 yrs in business, 70 P/As & S/As.

CCD Online Systems
 Call David Lee
1-800-328-6755

ORACLE

OUTSOURCE

Your Project to
 Oracle Masters

CASE Tools Financials
 Aix, Unix, C, VMS, OS/2, Cobol
 Authorized Oracle VARS

Executive Technologies

813-732-5242

813-732-5097 Fax

Education/Training

CALL NOW FOR...

Dr. James Martin's

Video Education Courses on:



- Object Oriented
- Client Server & Downsizing
- CASE, Techniques & Methodology
- Imaging & Information Management
- Re-Development, Reusability & Re-engineering

For your FREE
James Martin Insight
Courseware Catalog
on Diskette

Call 1-800-526-0452

JAMES MARTIN
INSIGHT
INC.

Over 629,000 computer
professionals read
Computerworld weekly.

Bids/Proposals/Real Estate

REQUEST FOR PROPOSALS COMPUTER EQUIPMENT MAINTENANCE

The Ohio Turnpike Commission is soliciting proposals for Computer Equipment Maintenance. The system consists primarily of Digital Equipment Corporation VAX computer systems. The equipment is located at the Ohio Turnpike Administration Building, 682 Prospect Street, Berea, Ohio.

Sealed proposals will be received at the Commission's offices, 682 Prospect Street, Berea, Ohio 44017, c/o Purchasing Agent, until 10:00 A.M. (E.D.T.), October 7, 1992, at which time and place all Proposals will be publicly opened and read.

Specifications for said Request for Proposals, including a form of affidavit to accompany any such Proposal, are on file and available at the office of the Commission's Purchasing Agent, at 216/234-2081, ext. 252. These documents will be forwarded upon request and without charge to any interested party. Questions on technical issues should be referred to Craig Rudolph, Comptroller, at 216/234-2081, ext. 275.

The Commission will enter into a single contract for the furnishing of services required, if any contract be made. The Commission reserves the right to reject any or all Proposals and the right to waive technicalities.

DATA CENTER

For Lease or Sale

Off Route 1 Corridor
nr. Princeton, N.J.

20,000sf Raised Floor
State of the Art Equip
+40,000sf Office

Call: Chris Jerjian

201 947-1177

REQUEST FOR BIDS

Racal-Datacom is accepting bids for lots of used data communications equipment. We're clearing our warehouse of excess and used inventory...everything from dedicated modems and muxes to X.25 pads. Thousands of products too numerous to list.

To receive a list of equipment available, write or call.

James Gaidry
Racal-Datacom
1601 North Harrison Parkway
Mail Station C210
Sunrise, FL 33323-2899
(305) 846-4371

NOTE: Closing date for bids will be noon EST, October 9, 1992.

ANOTHER REASON WHY COMPUTERWORLD'S PRODUCT CLASSIFIED PAGES WORK ...

Computerworld is the only computer publication to give readers an established classified advertising resource for over two decades! And since *Computerworld* has been the weekly computer newspaper of choice since 1967 - that means *Computerworld's* loyal readers will expect to see your classified message in *Computerworld's Product Classified Pages*!

To place your ad, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD PRODUCT CLASSIFIED

Where computer buyers meet computer sellers. Every week.

Product Showcase



FAX = SCANNER

Enables Your FAX MACHINE to Become a SCANNER
SOFTWARE HARDWARE

- Features:**
- Word processor compatible
 - Mouse compatible
 - Phone book for easy fax dialing
 - User friendly
 - Edit graphics, images, photos, and text
 - Include all tools for a laser quality fax
 - Folders for filing faxes and name cards
 - Full page scanning



FXSCAN ONLY \$79.95

TO ORDER: **1-800-949-1292**
INFORMATION: **1-714-468-5555**



Complete Keyboard Customizing

Featuring: Custom Key Imprinting

Full Color Keyboard Templates

Keytop Overlays • Language Keyboards

P.O.S. Keys • Custom Keyboards

Training, productivity & marketing solutions!

Hooleon Corp.

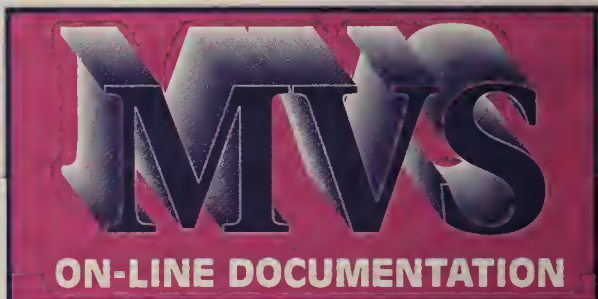
P.O. Box 230, Dept. COMW

Cornville, AZ 86325

Free Catalog

800 937-1337

Fax: 602 634-4620

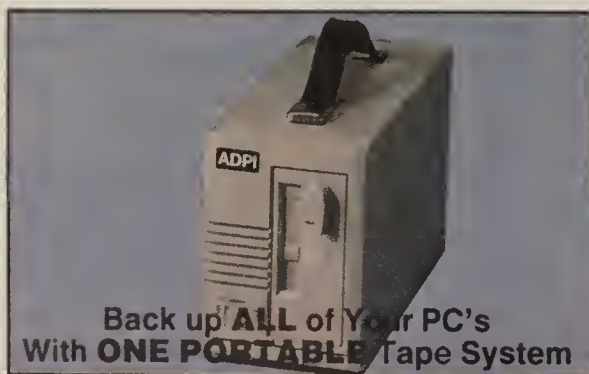


MVS QUICK-REF

gives you access to a concise summary of over one million lines of IBM and 3rd party MVS reference information in less than two seconds. For a free 30-day trial call...

ChicagoSoft

603-643-4002

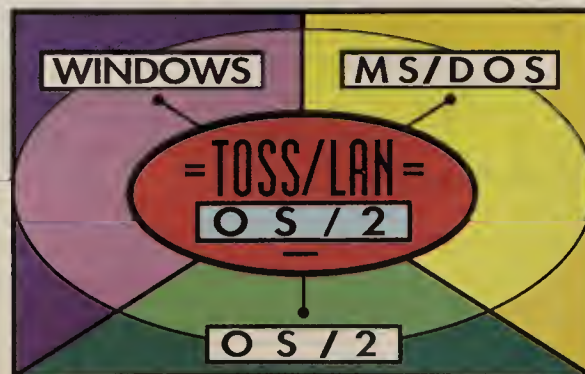


Back up ALL of Your PC's
With ONE PORTABLE Tape System

The multiple PC backup solution is as easy to install as it is to use. System plugs directly into parallel printer port of your computer without use of controller cards or special adapters. One backup system can be used for every PC in your office. Fast backup - up to 12 Meg/Min - 160 meg storage. 60/120 and 600/1200 Meg systems available November. MS/PC-DOS compatible, network NODE compatible. Menu-driven software. Full on-line help.

**Analog & Digital
Peripherals, Inc.**
(ADPI)

(513) 339-2241
FAX: (513) 339-0070



TRUE CLIENT-SERVER E-MAIL SYSTEM

TOSS/LAN under OS/2 is a complete e-mail system for Network, Vines or OS/2 LANs. End users can be on OS/2, DOS or Windows. A SNADS interface is provided to communicate with DISOSS, SoftSwitch, AS/400 and other e-mail systems. E-mail, Scheduler, Bulletin Boards, Forms, and Folders are all included in the system.

NBS Systems, Inc.

15 Mullen Road, Enfield, CT 06082

Tel: 203-741-2244

Fax: 203-745-5030



Bring 9-Track & 3480 Data To Your PCs

Our compact, light and powerful subsystems make it easy to interchange your data on 1/2 inch tape between your PCs, minis and mainframes. Choose from all popular densities and operating systems. Products are backed by long warranties and our comprehensive service and support program. Call for information and a free catalog.

OVERLAND DATA.
San Diego, CA

800-859-8559

TEL: 619-571-5555 FAX: 619-571-0982

Computerworld Company Index

► Page numbers refer to the page on which the story begins.

3Com Corp. 14,24

A

Aberdeen Group 1,20
Accolade, Inc. 73
Ad Hoc Telecommunications Users Committee 1
A. Davis Grant & Co. 97
Advanced Micro Devices, Inc. 6
Advanced Technology Research 28
Alamo Rent-A-Car, Inc. 79
Aldus Corp. 4
Alias Research, Inc. 51
Alliance Technologies, Inc. 72
Amdahl Corp. 48,81,82,109
American Airlines 6
Amoco Laser Co. 28
Andersen Consulting 6,7,16
Andersen, Jones & Muller Associates 85
Andor Research, Inc. 75
Apple Computer, Inc. 1,4,6,12,
..... 14,39,44,109,110
Applied Digital Data Systems, Inc. 65
Aristokraft, Inc. 81,82
Artisoft, Inc. 16
Atrium, Inc. 73
AT&T 63,72,97
AT&T/NCR 16,81
Au Bon Pain, Inc. 1
Avondale Mills, Inc. 79,83
Axil Workstations, Inc. 54

B

Bankers Trust Co. 14
Banyan Systems, Inc. 4
Beacon Software International 72
BIS Strategic Decisions 37,12
Borland International, Inc. 37,109
Brigham and Women's Hospital 85
Bristol-Myers Squibb Co. 97
Brownstone Solutions, Inc. 73
Buena Vista Home Video 85
Bull HN Information Systems, Inc. 73,81

C

Cabletron Systems, Inc. 14,15
CACI Products Co. 14
CAF Technology, Inc. 44
California Federal Bank 85
Campbell Services, Inc. 24
Candle Corp. 85
CAP Gemini Sogeti USA 85
Carnegie Mellon University 28
Carter McKenzie, Inc. 97
Cascade Communications Corp. 16
Celtic Life Insurance Co. 109
Center for Innovative Technology 73
CenterLine Software, Inc. 75
Champion International 67
Chicago Board of Trade 14
Chipcom Corp. 15
Christiansen & Fritsch, Inc. 87
Cincom Systems, Inc. 72
Circuit City Stores, Inc. 70
Cisco Systems, Inc. 15,63
Claris Corp. 4
Clarity 28
Clark Development Co. 75
Cleveland Consulting Associates 85
Clinical Reference Laboratory, Inc. 67
Colgate Palmolive U.S. 97
Communications Network Architects, Inc. 14
Compaq Computer Corp. 4,12,20,37,39,110
Compass America, Inc. 67
Compu-Design USA 67
Computer Associates International, Inc. 4,10,
..... 12,39,85,110
Computerland Corp. 4
Contemporary Cybernetics Group 72
Corel Systems Corp. 51,58
Corporate Association of Microcomputer Professionals (CAMP) 1
Covia Partnership 6
Creative Labs, Inc. 40
CSC Index, Inc. 85
CSX Corp. 63

D

Data General Corp. 109

Dataquest, Inc. 54,82
Dean Witter Reynolds 12
Dell Computer Corp. 4,12,40
DHL Worldwide Express 37,15
Digital Communications Associates, Inc. 65
Digital Equipment Corp. 4,6,7,14,15,16,
..... 20,24,28,48,67,72,73,74,58,110
Digital Equipment Computer Users Group (DECUS) 16
Dr. Taylor's Software, Inc. 75
Duke Power Co. 83

E

Educational Testing Service 1
Du Pont Co. 4,16
Elegant Communications, Inc. 15
Encore Computer Corp. 109
Ernst & Young 14
Escape Ergonomics 87,90
Everex Systems, Inc. 109

F

Federal Express Corp. 65
Federal Reserve Bank of New York 87
Fibermux Corp. 15
Fidelity Investments 73
Fidelity Systems Co. 74
Forrester Research, Inc. 10,12,14
Foundation Cooperative Processing 16
Frame Relay Forum 16
Frito-Lay, Inc. 6
Fujitsu Ltd. 72,81

G

Garber Travel 37
Gartner Group, Inc. 10,24,72,79
Gary Kaplan & Associates 85
GM Hughes Electronics 54
Gould, Inc. 109
Groupe Bull 21

H

Harnischfeger Corp. 1,20
Harris Corp. 52
Hewlett-Packard Co. 6,7,15,16,20,28,32,
..... 37,58,70,73,109
Hitachi Data Systems Corp. 48,80,81,83
Hughes Aircraft Co. 10
Hughes LAN Systems, Inc. 54
Hyatt Hotels Corp. 1

I

IBM Personal Computer Co. 6
IBM 1,4,7,10,12,14,15,16,20,24,39,48,
..... 63,74,79,80,81,83,44,58,109,110
ICL 72
Inacom Corp. 4
Independence Technologies, Inc. 72
Independent Computer Consulting Services, Inc. 72
Infodata Systems, Inc. 72
Information Systems Group, Inc. 67
Informix Software, Inc. 16,72
Ingram Micro, Inc. 85
Inno Design Corp. 51
Innovative Data Concepts 73
Institute for Office Ergonomics, Inc. 87
Institute of Electrical and Electronics Engineers, Inc. 54
Intel Corp. 6,81,109
Interactive Development Environments, Inc. 73
International Data Corp. 40,109
International TeleManagement Corp. 15
International Communications Association 1
Internex, Inc. 14
Intersolv, Inc. 6
IPL Systems, Inc. 15

J

James River Corp.'s Neenah Technical Center 1
Jersey City State College 97
John Hopkins Health System 67

K

Kentucky Fried Chicken 6
KI Research, Inc. 15
Kisco Information Systems 72
KnowledgeWare, Inc. 6

L

Landmark Research International Corp. 58
Land-O-Lakes, Inc. 81
Leading Edge Products, Inc. 51
Legato Systems, Inc. 58
Legent Corp. 12
Library of Congress 87
Lithonia Lighting 12
Lotus Development Corp. 37

M

Madge Networks, Inc. 14
Make Systems, Inc. 14
Maspar Computer Corp. 28
Massachusetts Blue Cross and Blue Shield 16
MCI Communications Corp. 63
McRoskey Management Sources 87
Mercedes-Benz of North America, Inc. 97
Merrin Information Services, Inc. 4
Meta Group, Inc. 12,24
Metropolitan Fiber Systems, Inc. 1
MicroLogic Software 44
Microsoft Corp. 1,16,37,44,72,73,87,110
Midas International, Inc. 1
Montgomery Securities 109
Mortgage Guaranty Insurance Corp. 63
Motorola 110
Mountain Gas Company 32

N

NASA 10
National Information Technology Center 1
National Institute for Occupational Safety and Health 87,90
National Media Corp. 87
National Railroad Passenger Corp. 87
National Semiconductor 6
NCR Corp. 65,72
NetFrame Systems, Inc. 52
Network Computing Devices, Inc. 65
Network Equipment Technologies, Inc. 15
Network General Corp. 16
Network Peripherals, Inc. 24
NeuralWare, Inc. 75
New England Memorial Hospital 15
New Jersey Bell 97
Nippon Mining Co. 109
Nippon Steel Corp. 12
Northeast Consulting Resources, Inc. 15
Northeast Utilities 81,82,83
Northern Indiana Public Service Co. 12
Novell, Inc. 4,14,15,16,52,54
Nutri/System, Inc. 87

O

Oasys, Inc. 75
Object Design, Inc. 72
Object Management Group 16
Open Software Foundation 1,20,72
Oracle Corp. 1,12,72
Oregon Mutual Insurance Co. 83
Outsource, Inc. 54

P

Packard Bell Electronics, Inc. 40
Parametric Technology Corp. 51
ParcPlace Systems, Inc. 6
Pavo Soft 109
Performance Systems International, Inc. 16
Perot Systems Corp. 6
Petrochemical Open Software Corp. 16
Phillips Consumer Electronics Co. 44
Proactive Software, Inc. 109
Profit Oriented Systems Planning Program 72
Proteon, Inc. 15,109
Prudential Securities, Inc. 110

R

Radio Shack 39
RE/AIMS 109
Real Decisions Corp. 67
Reliability Ratings 39,65
Rising Star Research, Inc. 24
Robert Half International, Inc. 85

S

SAP AG 109

SAP America, Inc. 109
Sega Enterprises Ltd. 73
Semaphore 73
Sequoia Pacific Voting Equipment Inc. 7
Sextant, Inc. 73
Silicon Graphics, Inc. 6,51
Software Productivity Research, Inc. 73
Software Productivity Consortium 73
Software Quality Automation 44
SOMA, Inc. 109
Sony Corp. 58
Sprint Corp. 63
Spry, Inc. 58
State University of New York 87
Stratton-Cheeseman Management Co. 12
Stratus Computer, Inc. 6,74
Stuart P. Orr & Associates 12
Sun Microsystems, Inc. 16,20,24,51,54,58,
..... 72,74,75,81,109,110
Swedish American Hospital 85
Sybase, Inc. 72,73,10
Symantec Corp. 109
SynOptics Communications, Inc. 15
Systematics Corp. 85
Systems Center, Inc. 6
Sytron Corp. 39

T

Tandy Corp. 6,40
Tangram Systems Corp. 6
TeamOne Systems, Inc. 73
Technology Investment Strategies Corp. 82
Technology Solutions Corp. 6
Teknekron Communications Systems, Inc. 64
Tektronix, Inc. 65
Telepartner International, Inc. 65
Teleport Communications Group 1
Texas A&M University 14
Texas Instruments, Inc. 54
The Ask Cos. 72
The American Cancer Society 14
The Burton Group 4,16
The Feld Group 6
The Mennen Group 97
The Newspaper Guild 87,90
The Santa Cruz Operation, Inc. 73
The Wollongong Group, Inc. 16
The Yankee Group 14
Time Customer Service, Inc. 85
TMA Associate 28
Toshiba America, Inc. 40
TransAmerican Insurance Group 12
Tricord Systems, Inc. 58
TVM Technologies, Inc. 87

U

Ungermann-Bass, Inc. 15
Unidata, Inc. 73
Unify Corp. 72
Unisys Corp. 7,48
University of Karlsruhe 28
US West, Inc. 65
US West New Vector Group, Inc. 65
U.S. Army Corps of Engineers 1
U.S. Department of Transportation (DOT) 6

V

Ventura Software 39
Virginia Center of Excellence 73
Visionary Software, Inc. 90

W

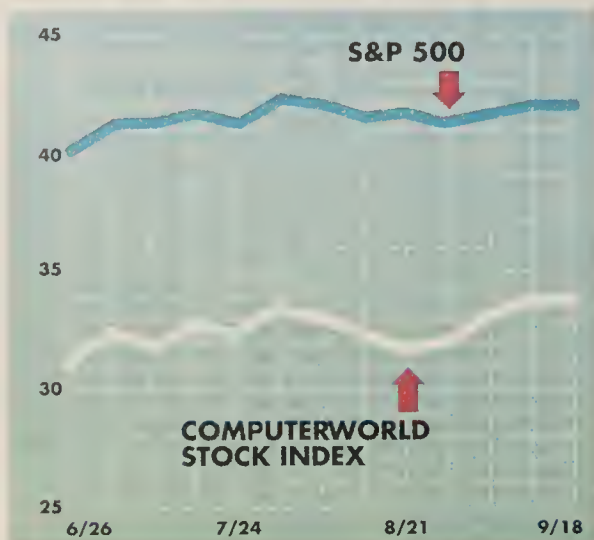
Walt Disney Co. 85
Wang Laboratories, Inc. 6,109
Watcom International Corp. 73
Wausau Insurance Cos. 1,20
Wellfleet Communications, Inc. 15
WilTel 63
WordPerfect Corp. 44
WorkGroup Technologies, Inc. 54,109

Z

Zenith 32

Computerworld Friday Stock Ticker

STOCK TRADING INDEX



Industry Almanac

SECTOR FOCUS: WORKSTATIONS & SOFTWARE

Laura Conigliaro and Gibbs Moody
Prudential Securities, Inc.
Sept. 10, 1992

Windows New Technology (NT), Microsoft Corp.'s (MSFT) high-performance operating system, is expected to elbow its way into the Unix market, possibly stunting or wiping out any growth opportunities for vendors such as Sun Microsystems, Inc. (SUNW).

However, NT must first hurdle over a few obstacles.

LAN Manager, a stand-alone product that will be bundled as the networking portion of NT, has so far garnered lukewarm responses from users. Because Windows NT's objective is to target department-level computing and beyond, a more robust LAN Manager — scheduled for delivery at the end of next year — is essential.

LISA DAVIDSON

Software signals

A collection of brokerage firm ratings for selected software stocks

	Alex. Brown & Sons, Inc.	Shearson Lehman Brothers, Inc.
Autodesk, Inc.	Neutral	Neutral
Borland International, Inc.	Buy	Out-perform
Computer Associates International, Inc.	Buy	Neutral
Informix Corp.	Strong buy	Neutral
Interleaf, Inc.	Buy	Under-perform
Microsoft Corp.	Strong buy	Buy
Oracle Corp.	Buy	Neutral
Sybase, Inc.	Neutral	Neutral

CLOSING PRICES FRIDAY, SEPTEMBER 18, 1992

TOP PERCENT GAINERS

Zeos International Ltd. (L)	69.23
Corporate Software	26.67
Phoenix Technologies	25.81
FileNet Corp.	24.07
Pyramid Technology (L)	19.30
Paychex (H)	15.60
EMC Corp.	15.49
Artel Communication Corp. (L)	14.29

TOP PERCENT LOSERS

Amdahl Corp.*	-35.34
Proteon Inc.	-32.50
Symantec Corp. (L)	-30.65
Everex Systems Inc. (L)	-25.00
State of the Art	-24.00
Meca Software	-14.81
Komag Inc.	-14.29
Microcom Inc.	-13.79

TOP DOLLAR GAINERS

Paychex (H)	4.25
Wellfleet Communications (H)	4.13
Novell Inc.*	3.38
FileNet Corp.	3.25
Computer Sciences*	2.88
EMC Corp.	2.75
Reynolds and Reynolds	2.50
Zeos International Ltd. (L)	2.25

TOP DOLLAR LOSERS

Amdahl Corp.*	-5.13
Proteon Inc.	-4.88
Symantec Corp. (L)	-4.75
IBM*	-4.50
Borland Int'l Inc.*	-4.50
Silicon Graphics	-2.63
Komag Inc.	-2.63
Platinum Technology	-2.00

Exch 52-Week Range

Sept. 18 Wk Net Wk Pct
Close Change Change

Communications and Network Services Up 0.79%

OTC	15.00	8.00	3 COM Corp.*	14.13	0.50	3.67
NYS	70.63	56.25	American Info Techs Corp.*	68.50	0.88	1.29
NYS	44.88	32.88	AT&T*	44.00	0.25	0.57
OTC	4.25	0.75	Artel Communication Corp. (L)	1.00	0.13	14.29
NYS	49.75	40.25	Bell Atlantic Corp.	48.38	-0.25	-0.51
NYS	55.50	43.38	Bellsouth Corp.	52.13	-0.13	-0.24
NYS	6.75	3.75	Bolt, Beranek & Newman	4.50	0.00	0.00
NYS	65.88	36.63	Cabletron Systems	62.38	-0.63	-0.99
OTC	31.00	17.50	Chipcom Corp.	26.38	0.88	3.43
OTC	55.25	18.63	Cisco Systems Inc. (H)	54.50	1.13	2.11
OTC	35.25	5.75	Compression Labs Inc.	7.25	-0.25	-3.33
OTC	3.38	0.88	Data Switch Corp.	1.75	0.13	7.69
NYS	23.63	14.38	Digital Comm. Assoc.*	14.50	-0.38	-2.52
OTC	15.25	8.00	Digital Systems Int'l Inc.	10.50	0.88	9.09
OTC	9.38	3.63	DSC Communications	9.38	0.63	7.14
OTC	10.88	4.75	Fibronix Int'l Inc.	5.63	0.00	0.00
OTC	37.50	10.50	FileNet Corp.	16.75	3.25	24.07
OTC	3.38	1.13	Gandalf Technologies Inc.	2.25	0.13	5.88
OTC	2.25	0.69	Gateway Communications	1.63	-0.06	-3.73
NYS	5.50	2.25	General Datacomm Inds.	3.50	-0.13	-3.45
ASE	5.88	0.50	Go Video	2.38	-0.13	-5.00
NYS	35.75	28.75	GTE Corp.*	33.25	0.13	0.38
NYS	70.63	50.00	ITT Corp.	64.25	-0.38	-0.58
OTC	36.25	25.25	MCI Comm. Corp. (H)	35.25	0.00	0.00
OTC	14.50	2.25	Microcom Inc.	3.13	-0.50	-13.79
NYS	18.25	9.50	Network Equipment Tech.*	11.50	-0.38	-3.16
OTC	25.50	8.00	Network General	12.25	0.25	2.08
OTC	20.00	8.50	Network Systems Corp.	12.25	-0.13	-1.01
OTC	18.50	5.63	Newbridge Networks Corp.	18.50	2.13	12.98
NYS	49.25	33.75	Northern Telecom Ltd.*	35.00	0.00	0.00
OTC	65.00	35.50	Novell Inc.*	57.50	3.38	6.24
NYS	88.38	69.13	Nynex Corp.*	83.38	0.63	0.76
OTC	37.50	16.50	Octel Communications Corp.	23.00	0.25	1.10
OTC	9.88	4.00	Pennil Data Comm. Ntwks.	5.38	-0.13	-2.27
OTC	53.00	10.25	Picturetel Corp.	14.50	-0.25	-1.69
OTC	18.75	9.75	Proteon Inc.	10.13	-4.88	-32.50
NYS	29.50	12.50	Scientific Atlanta Inc. (H)	28.50	-0.63	-2.15
NYS	69.00	53.75	Southwestern Bell Corp.	66.13	0.38	0.57
NYS	26.38	20.75	Sprint Corp.	22.63	-0.38	-1.63
OTC	15.63	4.00	Standard Microsystems Corp(H)	14.75	-0.38	-2.48
OTC	42.25	14.25	Synoptics Communications (H)	42.00	1.38	3.38
NYS	40.00	32.88	US West Inc.	37.50	-0.63	-1.64
OTC	46.00	24.00	Wellfleet Communications (H)	46.00	4.13	9.85

PC and Workstations

Up 3.26%

OTC	14.50	4.00	Advanced Logic Research (L)	4.25	-0.25	-5.56
OTC	70.00	42.75	Apple Computer Inc.*	46.50	-1.13	-2.36
OTC	32.25	11.25	AST Research Inc.*	16.50	1.25	8.20
NYS	19.25	6.75	Commodore Int'l	7.50	-0.50	-6.25
NYS	35.75	22.13	Compaq Computer Corp.*	34.88	2.00	6.08
OTC	29.00	13.91	Dell Computer Corp.	28.25	1.75	6.60
OTC	7.75	1.50	Everex Systems Inc. (L)	1.50	-0.50	-25.00
NYS	34.00	21.25	Harris Corp.	32.63	1.25	3.98
NYS	85.00	44.63	Hewlett-Packard Co.*	59.50	2.13	3.70
NYS	29.75	14.13	Silicon Graphics	20.25	-2.63	-11.48
OTC	35.88	20.75	Sun Microsystems Inc.*	31.25	0.13	0.40
NYS	31.25	22.25	Tandy Corp.*	24.00	0.00	0.00
NYS	11.13	5.13	Zenith Electronics	6.63	-0.13	-1.85
OTC	25.50	2.75	Zeos International Ltd. (L)	5.50	2.25	69.23

Large Systems

Off 1.80%

ASE	20.63	9.38	Amdahl Corp.*	9.38	-5.13	-35.34
NYS	15.50	6.41	Ceridian Corp.	14.00	-0.13	-0.88
NYS	16.38	5.25	Convex Computer	6.25	-0.13	-1.96
OTC	19.63	1.88	Cray Computer	3.00	0.00	0.00
NYS	52.25	22.75	Cray Research Inc.*	25.88	0.00	0.00
NYS	22.50	7.13	Data General Corp.	10.00	0.38	3.90
NYS	65.50	33.25	Digital Equipment Corp.*	39.38	1.38	3.62
NYS	105.88	81.63	IBM*	83.50	-4.50	-5.11
OTC	13.25	7.50	Kendall Square Research	9.25	0.25	2.78
NYS	121.25	88.25	Matsushita Electronics	96.00	0.00	0.00
OTC	19.75	6.75	Pyramid Technology (L)	8.50	1.38	19.30
OTC	17.88	8.13	Sequent Computer Sys.	16.13	-0.50	-3.01
OTC	18.38	5.00	Sequoia Systems Inc.	8.00	0.00	0.00
NYS	54.25	37.38	Stratus Computer Inc.*	46.38	0.38	0.82
NYS	15.13	9.50	Tandem Computers Inc.*	10.88	-0.25	-2.25
NYS	11.75	3.63	Unisys Corp.*	8.88	0.00	0.00
ASE	7.50	0.25	Wang Labs Inc. (b)*	0.44	-0.06	-12.40

Software

Off 0.17%

OTC	68.50	31.50	Adobe Systems Inc. (L)	32.75	0.38	1.16
OTC	13.25	2.50	AI Corp.	3.50	0.13	3.70
OTC	45.00	11.50	Aldus Corp.	13.00	0.25	1.96
OTC	19.75	8.50	American Software Inc.	9.63	-0.50	-4.94
OTC	20.00	9.75	Ask Computer Systems	15.25	-1.00	-6.15
OTC	52.00	23.25	Autodesk Inc.	48.50	-1.00	-2.02
OTC	37.75	7.00	Bachman Info. Systems	7.00	-1.00	-12.50
OTC	42.50	31.50	BGS Systems Inc.	38.25	1.75	4.79
OTC	79.00	37.25	BMC Software Inc.	58.75	1.75	3.07
OTC	20.50	9.00	Boole & Babbage	18.88	0.38	2.03
OTC	86.75	35.00	Borland Int'l Inc.*	41.88	-4.50	-9.70
OTC	11.25	3.63	CE Software	4.50	0.38	9.09
ASE	18.63	6.66	Cheyenne Software Inc. (H)	18.63	1.75	10.37
OTC	20.38	6.88	Cognos Inc. (L)	7.25	0.38	5.45
NYS	17.00	7.50	Computer Associates*	15.50	-0.50	-3.13

Exch 52-Week Range

Sept. 18 Wk Net Wk Pct
Close Change Change

OTC	12.38	9.75	Computervision Corp.	10.75	0.00	0.00
OTC	20.00	7.25	Comshare Inc.	7.25	-0.75	-9.38
OTC	47.88	6.50	Easel Corp.	8.00	0.00	0.00
OTC	25.50	11.50	Group I Software	14.50	-0.50	-3.33
OTC	6.63	3.50	Hogan Systems Inc.	5.25	0.38	7.69
OTC	36.25	18.50	Information Resources	26.50	1.25	4.95
OTC	22.00	3.25	Informix Corp. (s)	21.00	0.56	2.75
OTC	22.38	12.50	Intergraph Corp.	14.75	0.50	3.51
OTC	15.00	6.25	Interleaf Inc.	9.50	0.13	1.33
OTC	20.25	9.88	Intersolv Inc.	17.38	1.38	8.59
OTC	21.38	10.50	Knowledgeware Inc.	11.75	-0.25	-2.08
OTC	48.25	26.00	Legent Corp.* (H)	46.25	0.25	0.54
OTC	38.75	15.50	Lotus Development*	19.75	2.00	11.27
OTC	7.38	1.88	Meca Software	2.88	-0.50	-14.81
OTC	22.25	6.50	Mentor Graphics	8.25	0.75	10.00
OTC	37.25	27.25	Micro Focus	35.25	0.88	2.55
OTC	20.50	6.50	Micrograph Inc.	8.50	0.00	0.00
OTC	88.84	56.34	Microsoft Corp.*	79.88	1.13	1.43
OTC	21.13	10.25	Oracle Corp.*	20.25	0.50	2.53
OTC	49.75	15.50	Parametric Technology (H)	47.50	-0.25	-0.52
OTC	11.00	3.50	Phoenix Technologies	4.88	1.00	25.81
OTC	25.25	12.13	Platinum Technology	15.00	-2.00	-11.76
OTC	46.50	29.00	Progress Software Corp.	46.00	1.88	4.25
OTC	26.63	4.00	Quarterdeck Office Sys.	4.63	0.25	5.71
OTC	32.75	11.75	Rainbow Technologies Inc.	18.25	1.25	7.35
OTC	24.50	7.50	Rasterops	9.25	0.00	0.00
OTC	17.25	5.38	Ross Systems	6.75	0.25	3.85
OTC	12.25	8.50	Sapiens USA Inc. (H)	11.75	-0.25	-2.08
OTC	26.25	7.50	Software Publishing Corp.	10.50	0.00	0.00
OTC	8.50	2.00	Software Toolworks Inc.	3.00	-0.13	-4.00
OTC	7.25	1.75	Spinnaker Software	2.50	0.13	5.26
OTC	16.50	4.75	State of the Art	4.75	-1.50	-24.00
NYS	25.25	13.75	Sterling Software Inc.	17.50	-0.38	-2.10
OTC	30.00	9.50	Struct. Dynamics Research (L)	10.25	-0.25	-2.38
OTC	36.75	16.00	Sybase Inc. (H)	35.75	1.50	4.38
OTC	51.00	10.50	Symantec Corp. (L)	10.75	-4.75	-30.65
NYS	15.50	5.25	Systech Corp.*	5.75	-0.50	-8.00
OTC	34.25	13.00	System Software Assoc.	25.00	1.50	6.38
OTC	23.75	14.50	Walker Interactive Systems	18.25	-1.25	-6.41
OTC	6.63	2.00	Wordstar	2.00	-0.25	-11.11

Semiconductors

Off 0.64%

NYS	21.50	7.38	Advanced Micro Devices	12.25	-0.13	-1.01
NYS	11.13	7.00	Analog Devices Inc.	10.88	0.13	1.16
OTC	12.00	6.75	Atmel Corp.	10.88	-0.13	-1.14
OTC	14.13	3.25	Chips and Technologies	4.25	0.25	6.25
NYS	21.50	7.38	Cypress Semiconductor Corp	8.75	-1.25	-12.50
NYS	11.63	6.25	Dallas Semiconductor	11.63	0.38	3.33
OTC	68.75	38.50	Intel Corp.*	65.25	1.25	1.95
NYS	9.88	4.88	LSI Logic Corp.	6.63	0.13	1.92
NYS	22.38	12.13	Micron Technology	14.63	-0.63	-4.10
NYS	91.00	54.00	Motorola Inc.* (H)	90.00	0.00	0.00
NYS	12.38	3.88	National Semiconductor* (H)	12.13	0.25	2.11
OTC	27.00	8.25	Sierra Semiconductor	10.50	-1.50	-12.50
NYS	45.00	26.00	Texas Instruments* (H)	45.00	1.50	3.45
OTC	10.50	6.00	VLSI Technology	7.88	-0.63	-7.35
OTC	8.75	2.13	Weitek	3.13	0.13	4.17
ASE	5.63	2.00	Western Digital Corp.	4.63	0.13	2.78
OTC	32.50	17.25	Xilinx	20.50	0.00	0.00
OTC	11.50	6.00	Zilog Inc.	7.63	0.00	0.00

IN BRIEF

Amdahl loss likely

■ **Amdahl Corp.** last week said a decline in demand for its new 5995M mainframe is likely to cause an operating loss of between 10 cents and 20 cents a share in its fiscal third quarter, which ends Sept. 25. Revenue is expected to fall below second-quarter levels of \$692.9 million, the Sunnyvale, Calif., company said. The depressed global economy was blamed for the company's woes.

■ Looking to expand its services globally, **Lotus Development Corp.** last week acquired three consultancies. The three acquired firms are: **SOMA, Inc.** in Toronto; **PAVO-SOFT** in Paderborn, Germany; and **RE/AIMS** in Dallas. All three will operate as part of Lotus Consulting Services. Terms of the acquisitions were not disclosed.

■ **SAP AG**, the parent company of **SAP America, Inc.**, posted profits of \$35 million for the first half of the year ended June 30, an increase of 24% from the same period a year earlier. Revenue for the period was up almost 26% to \$273 million. SAP's North American operations were cited as a significant contributor to the upbeat results.

Short takes

Proteon, Inc. and **Symantec Corp.** warned analysts that their quarterly results would be below expectations. . . . **Encore Computer Corp.** completed a two-phase, \$150 million financial restructuring with **Gould, Inc.** and its parent company, **Nippon Mining Co.** . . . **Proactive Software, Inc.**, a developer of customer service applications, has received \$4 million in second-round venture capital financing. . . . **Intel Corp.** last week announced the first cash dividend in the company's history, a 10 cents per share payout to be distributed on Dec. 1 to shareholders of record as of Nov. 1.

DG makes waves in RAID storage market

Forms new unit dedicated to supplying RAID subsystems for Unix machines from IBM, Sun, HP

BY KIM S. NASH
CW STAFF

NEW YORK — Data General Corp. last week upped the stakes of its hardware-centric survival gambit by forming a new division dedicated to making and selling RAID storage subsystems for other vendors' Unix machines.

At a briefing here, DG Chief Executive Officer Ron Skates outlined plans to storm a virtually untouched market: storage products based on redundant arrays of inexpensive disks (RAID) technology for Unix lines from IBM, Sun Microsystems, Inc. and Hewlett-Packard Co., among others. Skates said the product line, called Clariion, is "a tremendous opportunity" for the Westboro, Mass.-based company. Tom West, senior vice president, will head up the Clariion division.

The subsystems will be sold

through value-added resellers, OEMs and distributors, the company said.

The Clariion unit is a smart way to plug a gap between declin-

ing MV minicomputer revenue and slowing sales of DG's Unix-based Avion line of workstations and servers, analysts said. For the most recent quarter, DG reported an \$11.7 million loss, compared with \$35.6 million in profits

last year. Sales dipped from \$301 million to \$259 million. Although he declined to reveal sales projections for Clariion, Skates pointed out that more than \$22 billion is up for grabs in the storage market, according to Montgomery Securities. When IBM recently rolled out a RAID subsystem for its Application System/400, executives suggested that RAID for the RISC System/6000 is not far behind.

However, Skates said that with DG's head start, "we are confident we can go against anyone who comes along."

"DG is ahead of [RAID] competitors [in the Unix market] by several months. That's a sizable step," agreed Stephen Widen, program director at WorkGroup Technologies, Inc., a consulting firm in Hampton, N.H. Widen said he expects first-year sales of Clariion to range between \$150 million and \$200 million.

DG's hardware bent stands in contrast to the strategies of other former high rollers in the proprietary minicomputer market, such as Wang Laboratories, Inc. Wang bet on a software/service makeover as its ticket out of the financial basement.

But DG stuck with systems,

unveiling its Unix-based Avion line four years ago. DG has since delved into the storage market with RAID products for Avion and the proprietary MV line, HADA II and HADA, respectively. However, Clariion is targeted strictly at non-DG machines. Skates explained that the company will essentially become a third-party supplier of RAID for RS/6000 and HP 9000 Series 800 lines, among others.

Storage overkill?

Clariion begs the question of why anyone needs 24G bytes of storage under his desk. Most Unix business applications do not require it, explained Steve Despain, information systems programmer at Celtic Life Insurance Co. in Chicago.

RAID intrigues Despain, but he said, "The application I have on the RS/6000 just doesn't need it because it's not that a big deal if the application goes down." However, the company is seriously considering RAID for an E series AS/400 it plans to buy before the end of the year.

"We're looking at RAID there because we'll be running mission-critical apps," which could include imaging, Despain explained. Indeed, relatively inexpensive desk-side RAID could kick-start data-intensive technologies such as imaging and voice recognition, Widen added.

Trumpeting storage

Data General's foray into the third-party RAID market consists of the following:

Clariion disk array

Capacity: Up to 24G bytes.

Prices: \$28,000 for entry 2.5G-byte/stripe system; \$20,000 for add-ons. \$46,000 for entry 6G-byte/stripe system; \$34,000 for add-ons.

Availability: November for RS/6000, SPARCstation versions. By early 1993 for HP, Unisys Corp., ICL PLC versions.

Clariion tape backup array

Capacity: Up to 20G bytes.

Price: \$30,000.

Availability: By early 1993.

ing MV minicomputer revenue and slowing sales of DG's Unix-based Avion line of workstations and servers, analysts said. For the most recent quarter, DG reported an \$11.7 million loss, compared with \$35.6 million in profits

Borland/Symantec war over 'secrets' heats up

BY CHRISTOPHER LINDQUIST
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc. last week claimed that a former Borland employee other than ex-Vice President Gene Wang had transferred confidential information to Symantec Corp., Wang's new place of employment.

Borland released a statement attributed to human resources manager Kim Begley, alleging that Lynn Georganes, Wang's administrative assistant, had twice requested and been granted permission to return to Borland to retrieve "personal items" and files from the Borland computer system.

According to the statement, Georganes copied several files to floppy disks and appeared to delete "numerous" files. After her second access to the system, Georganes was stopped by Scotts Valley police, and the contents of the disks were reviewed, according to the statement.

Begley said she was then informed that the disks contained "Borland confidential informa-

tion." Georganes could not be reached for comment.

The statement is the latest chapter in the Borland vs. Symantec saga that began two weeks ago when Borland accused Wang of stealing Borland confidential information for Symantec to use [CW, Sept. 7].

Frenzied pursuit

Since that time, Borland has engaged in a faxing frenzy, sending search warrants, court orders and Begley's statement to the press.

Symantec, however, has been relatively silent, sending out nothing more than short, one-page responses to Borland's allegations.

Symantec's only reply came in a statement that said Begley's declaration contained "obvious errors" and was merely "hearsay." The statement did not indicate whether the disks had indeed contained confidential Borland information.

A second hearing Sept. 29 will explore whether Symantec violated a previous temporary restraining order.

PC price dive takes toll; Everex announces layoffs

FREMONT, Calif. — Everex Systems, Inc. further tightened its belt last week, announcing layoffs that analysts said were yet another sign that the personal computer price war is taking its toll.

The company said it would reduce its work force by about 12%, or 250 people worldwide. The layoffs follow closely on the heels of a similar pruning in August and bring the total head count at Everex to about 1,850.

Steve Hui, chief executive officer at Everex, attributed the action to the brutal price wars currently roaring through the PC industry. He said the company would try to sidestep them as much as possible by concentrating on such higher margin areas as networked, fault-tolerant computers. Everex's newly formed Advanced Systems Division was established to further this aim, he said.

The recent low-end PC lines introduced by Apple Computer, Inc. and IBM Personal Computer Co. have further eroded the niche that Everex had successfully mined in the past, said Richard Zwetckhenbaum, an analyst at International Data Corp. "Everex used to push better performance at a lower price," he said. "Now, it's hard for vendors to fly in that atmosphere because the air is getting awfully thin."

CAROL HILDEBRAND

TRENDS

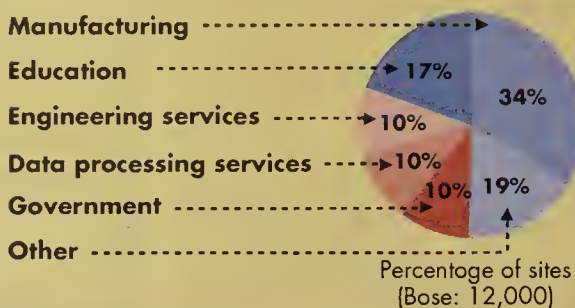
HIGH PERFORMANCE

WORKSTATIONS

U.S. manufacturing sites, which have had a long history of CAD/CAM use, are showing a slight increase in use of commercial applications.

INDUSTRY DISTRIBUTION

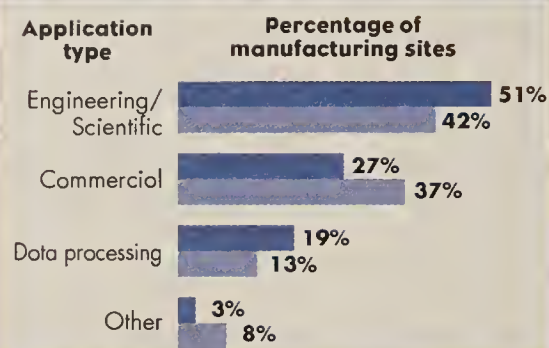
The Top 5 industries heavily using high-performance workstations include:



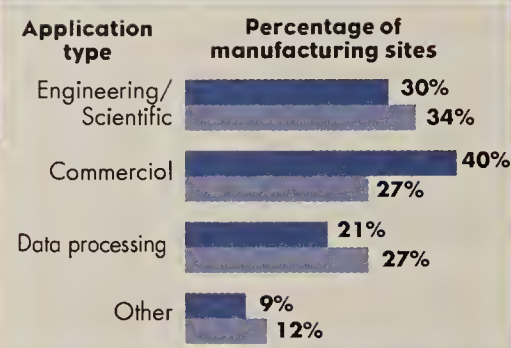
USAGE

About one-fifth of the workstations at both types of sites are used for data processing, which includes application development, computer operations and information management.

Manufacturing sites



Non-manufacturing sites



TOP 4 APPLICATIONS

Manufacturing

1. CAD/CAM
2. Engineering
3. Manufacturing
4. Software development

Non-manufacturing

1. CAD/CAM
2. Software development
3. Accounts receivable
4. Integrated accounting

Source: Computer Intelligence, La Jolla, Calif.

CW Chart: Stephanie Faucher

NEXT WEEK

Business applications programmers just can't take the PC seriously as a development platform. That's because PCs lack the tools, methodologies and support facilities that make sense for team-oriented developers in large companies. In Depth reveals what developers are pining for so they can take advantage of the easy-to-use PC.



James Yang

The straight line may still be the shortest distance between two points — but it isn't the only path to IS leadership. Witness, for instance, El Segundo, Calif.-based defense and technology player Hughes Aircraft, where some of the leading lights of IS, including Chief Information Officer Jim Wensley, come from non-IS backgrounds. See Manager's Journal.

INSIDE LINES

Universal management

► Satisfying its hunger for mainframe-class systems management tools for commercial Unix, Sun is expected today to announce a major deal with Computer Associates. Sources close to the duo confirmed that CA will port its CA-Unicenter suite of integrated systems management applications to the Sun Solaris platform. Deliveries are expected within a year, sources said.

Just leave it under the mat

► A bug in CA's License Management Program — the software that prevents CA products from being run on unlicensed mainframes — could prevent some users from turning on the latest release of CA-7 automated scheduling software. Users upgrading to Release 3.0 who are on a CPU license arrangement need a software code or "key" to activate the program. But they don't know that unless they read the documentation. License Management has been a sore point for some CA customers, and hoping to head off the problem, the vendor recently sent a letter to CA-7 users offering the key at no charge over the phone. CA said most of its users have site licenses and won't need a key, but one user said he doesn't want to expose his company's business operations to practices he can't control. Until CA comes up with a different solution, he said he doesn't plan on upgrading to Release 3.0.

Slippery when wet

► Mike Maples, Microsoft's executive vice president of worldwide products group, said the company's timetable for a general release of its New Technology (NT) is two to three weeks behind schedule. Maples left the door open for other slips, adding that Microsoft is reviewing feedback from the 14,000 beta-test copies of NT in developers' hands before setting the final ship date. But he was quick to add, "There's no reason to believe it won't ship by around the first of the year."

Chipping away

► IBM, Apple and Motorola are reportedly months ahead of schedule in producing the first big fruits of their alliance and could have a working sample of their new microprocessor, the Model 601, out within weeks. The three companies originally thought they could not produce a prototype chip until early next year, but the new development could speed up the entire schedule.

Loaded for Compaq

► Oct. 6 will likely see the debut of an IBM 486-based color notebook, priced at or below a competitive Compaq product, said one source who has been briefed. Also on the agenda are docking stations for the notebooks. As for the ValuePoint line, IBM isn't talking much, but one source says the machines don't look like anything IBM has put out before. Pricing is expected to be competitive with the clones.

Pink Tide rises at DEC

► Layoff and resignation figures for the past quarter at DEC will be released after Sept. 30, with numbers expected to total at least 5,000, according to inside sources. This is double the highest number of departing employees for any previous quarter but only 25% of the total amount of people expected to be axed by the end of 1992, the sources said.

Unix Expo's International Award for Excellence in Open Systems will be a tie this year, sources tell us, with Kmart and Australia's Department of Planning and Housing in Victoria each declared a winner in implementing open systems. Kmart reckons it has saved more than \$150 million with its Unix-based Strategic Store Environment, and the Australian agency counts staff savings in excess of \$2.1 million a year. Nine companies entered the contest, including Salomon Brothers in New York, the public prosecutor's office in Sydney, Australia, and the Burlington Coat Factory in Lebanon, N.H. The winners take home a glass sculpture from Tiffany's. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

Informix Database Technology Helps Corn Products Keep Cash Flowing.



When Corn Products, a unit of CPC International Inc., needed to move mission-critical accounting functions off the mainframe, they turned to Concepts Dynamic, Inc. — an Informix VAR — and Informix, the experts in UNIX relational technology.

Millions of Dollars In Annual Receivables.

Corn Products, whose corn sweeteners and starches are used in everything from soft drinks to pharmaceuticals, needed to process an enormous amount of cash receivables. They needed a system that would track cash through multiple lock boxes and automatically reconcile financial transactions to multiple receivable ledgers.

Corn Products chose the CDI/Informix UNIX solution.

Replacing Mainframe Collections Software.

Corn Products chose Concepts Dynamic's Credit Management System to achieve complicated receivables processing goals. By using CDI, Corn Products' customer invoices are fed into receivables with full data validation, audit trails, and financial control. And CDI replaces mainframe collections software with a cost-effective, flexible UNIX solution.


Corn Products and thousands of other companies have called on Informix and Informix VARs to successfully handle their critical data.

If you're considering UNIX for data management, talk to Informix. Because we're the experts.

Call 1-800-688-IFMX.



THE UNIX DATABASE EXPERTS.



Your network is a unique creature,
and we can service
every part.

One call to Bull, the nationwide, multi-vendor problem-solver, provides you with complete service for your network—whether it's Novell, 3COM or Microsoft—and its attached servers, workstations and peripherals. No matter how many different kinds of equipment you've linked together, we have the products and services you need. In addition to servicing your existing network, our TotalCare™ consultants can help you design a new one.

And we offer a wide range of software, interface cards and servers. TotalCare is completely modular, allowing you to select only those specific service options and products that fit your needs. The fact is, your network is a unique creation.

So call the vendor uniquely qualified to service every piece of it—Bull.

Worldwide
Information
Systems



For a 20% discount on your first purchase of networking products and services, call 1-800-233-BULL, ext.0180.